

MECHANIX ILLUSTRATED

SEPTEMBER

15¢



Odd Bikes—Page 70

**GADGETS CAN MAKE YOUR FORTUNE
AUTO ROAD RACING REVIVED BY SPORTSMEN**

Mason's New ZIPPER Shoe



**ZIPS ON
ZIPS OFF**



**SELL MASON'S
GENUINE RUBBER
RAINCOATS**

Sell fast. Big profits for you! Guaranteed waterproof in heaviest rainstorms . . . thousands of customers all around you.



**MASON'S
LEATHER JACKETS**

Keep profits rolling in with these soft, pliable, yet tough and warm, long-wearing Leather Jackets of specially dressed hides. **Low Price**—amazingly liberal commissions for you!

MASON'S MANY ADVANTAGES!

150,000 Pairs of Shoes!

You draw on our stock of 150,000 pairs of fine shoes in over 150 different styles plus immense daily factory-output. What a selection . . . exact size and width with perfect fit in the wanted style and color . . . *every* time! More shoes than your customers could find in many stores combined!

EVERY MASON SALESMAN AN EXPERT SHOE FITTER

Learn to fit every customer through Mason simple, accurate, easy-to-learn methods. Mason **TRAINS YOU** and makes you a Foot Expert and Certified Shoe Fitter. Mason helps you build a Big Money-Making, Permanent, Repeat Shoe Business!

Skyrockets

your SALES and PROFITS!

Top quality glove-soft leather . . . Mason craftsmanship . . . astonishing Zipper shoes lead record-breaking Mason line of over 150 superb styles of dress, work, sport shoes for men and women, with Leather Jackets, Raincoats, and other fact-selling items. A line that maintains Mason's 45-year reputation for LEADERSHIP.

POWERFUL NATIONAL ADVERTISING

Powerful National Advertising in SATURDAY EVENING POST, GOOD HOUSEKEEPING . . . scores of other powerful National Magazines . . . paves the way for you.

GET SAMPLE OUTFIT FREE!

Sell the great Mason ZIPPER Shoe and hundreds of other newest styles and models! Get Big FREE Sample Outfit! Be first in your territory.

MEN AND WOMEN WELCOME COMFORT OF

Air Cushioned Velvet-Eez

Show men and women exclusive Air-Cushioned Velvet-Eez shoes that cradle foot on 10,000 tiny air bubbles! Many report they sell on six out of every ten calls!



Remember, Mason Shoes are backed by the Good Housekeeping Seal of Approval—they've got to be good!

DON'T DELAY—MAIL TODAY

CLIP and MAIL COUPON NOW!

MASON SHOE MFG. CO.
Dept. M-361, Chippewa Falls, Wis.

RUSH me your great New Free Sample Outfit. Include your Automatic Selling Plan and send the book 5,000 Salesmen wrote for me. I want to become a Foot Expert and Certified Shoe Expert . . . and start making big money fast. Send everything **FREE** and prepaid.

(My own shoe size is

Name

Address

Town..... State.....

MASON SHOE MANUFACTURING CO.

Dept. M-361, Chippewa Falls, Wis.

e

L



astounding
styles of
Raincoats,
s 45-year

NG
NG POST,
National

her newest
be first in

PORT OF



ason Sheet
the Good
Seal of Ap
got to b.

NOW!

utfit. In-
send the
nt to be-
pert . . .
everything

.....)
.....
.....
.....



THERE'S BIG MONEY IN DRAFTING



JOIN the career-minded men who are *drafting* successful futures for themselves. Design your own program for self-improvement. International Correspondence Schools can show you how.

I. C. S. Courses in Mechanical or Architectural Drafting have helped many hundreds of ambitious young men get started in this rewarding field—have helped pave the way for promotions and salary increases.

Each of the 400 I. C. S. Courses (covering business and technical subjects) is prepared by outstanding authorities with *practical* knowledge of their subject. Each is revised to meet up-to-the-minute developments.

You want to be counted among tomorrow's leaders. You want the rewards that come with *training*. Then get started by clipping and mailing the coupon *today!* It's your application for a share in the future.

INTERNATIONAL CORRESPONDENCE SCHOOLS

APPROVED
under the
G. I. BILL

BOX 2317-V, SCRANTON 9, PENNA.

Without cost or obligation, please send me full particulars about the course BEFORE which I have marked X:

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> Air Conditioning and Plumbing Courses | <input type="checkbox"/> Structural Engineering | <input type="checkbox"/> Industrial Metallurgy | <input type="checkbox"/> Textile Courses |
| <input type="checkbox"/> Heating | <input type="checkbox"/> Surveying and Mapping | <input type="checkbox"/> Machine Shop | <input type="checkbox"/> Cotton Manufacturing |
| <input type="checkbox"/> Refrigeration | <input type="checkbox"/> Communications Courses | <input type="checkbox"/> Mechanical Engineering | <input type="checkbox"/> Loom Fixing |
| <input type="checkbox"/> Plumbing | <input type="checkbox"/> Electronics | <input type="checkbox"/> Mold-Loft Work | <input type="checkbox"/> Textile Designing |
| <input type="checkbox"/> Steam Fitting | <input type="checkbox"/> Practical Telephony | <input type="checkbox"/> Patternmaking—Wood, Metal | <input type="checkbox"/> Woolen Manufacturing |
| <input type="checkbox"/> Chemical Courses | <input type="checkbox"/> Radio, General | <input type="checkbox"/> Reading Shop Blueprints | |
| <input type="checkbox"/> Chemical Engineering | <input type="checkbox"/> Radio Servicing | <input type="checkbox"/> Sheet-Metal Drafting | <input type="checkbox"/> Business and Academic Courses |
| <input type="checkbox"/> Chemistry, Analytical | <input type="checkbox"/> Telegraph Engineering | <input type="checkbox"/> Sheet-Metal Worker | <input type="checkbox"/> Accounting |
| <input type="checkbox"/> Chemistry, Industrial | <input type="checkbox"/> Electrical Courses | <input type="checkbox"/> Ship Drafting | <input type="checkbox"/> App. Psychology |
| <input type="checkbox"/> Chemistry, Mfg. Iron & Steel | <input type="checkbox"/> Electrical Drafting | <input type="checkbox"/> Tool Designing | <input type="checkbox"/> Bookkeeping |
| <input type="checkbox"/> Petroleum Refining | <input type="checkbox"/> Electrical Engineering | <input type="checkbox"/> Welding Engineering | <input type="checkbox"/> Business Administration |
| <input type="checkbox"/> Plastics | <input type="checkbox"/> Electric Light and Power | <input type="checkbox"/> Welding—Gas and Electric | <input type="checkbox"/> Bus. Correspondence |
| <input type="checkbox"/> Pulp and Paper Making | <input type="checkbox"/> Lighting Technician | <input type="checkbox"/> Railroad Courses | <input type="checkbox"/> Certified Public Accounting |
| <input type="checkbox"/> Civil Engineering, Architectural and Mining Courses | <input type="checkbox"/> Practical Electrician | <input type="checkbox"/> Air Brake | <input type="checkbox"/> Commercial |
| <input type="checkbox"/> Architecture | <input type="checkbox"/> Internal Combustion Engines Courses | <input type="checkbox"/> Car Inspector | <input type="checkbox"/> Commercial Art |
| <input type="checkbox"/> Architectural Drafting | <input type="checkbox"/> Auto Technician | <input type="checkbox"/> Diesel Locomotive | <input type="checkbox"/> Cost Accounting |
| <input type="checkbox"/> Bridge and Building Foreman | <input type="checkbox"/> Diesel-Electric | <input type="checkbox"/> Locomotive Engineer | <input type="checkbox"/> Federal Tax |
| <input type="checkbox"/> Building Estimating | <input type="checkbox"/> Gas Engines | <input type="checkbox"/> Locomotive Fireman | <input type="checkbox"/> Foremanship |
| <input type="checkbox"/> Civil Engineering | <input type="checkbox"/> Aviation | <input type="checkbox"/> Locomotive Machinist | <input type="checkbox"/> French |
| <input type="checkbox"/> Coal Mining | <input type="checkbox"/> Mechanical Courses | <input type="checkbox"/> Railroad Section Foreman | <input type="checkbox"/> Good English |
| <input type="checkbox"/> Contracting and Building | <input type="checkbox"/> Aircraft Drafting | <input type="checkbox"/> Steam-Diesel Loco. Eng. | <input type="checkbox"/> Higher Mathematics |
| <input type="checkbox"/> Lumber Dealer | <input type="checkbox"/> Flight Engineer | <input type="checkbox"/> Stationary Eng'g Courses | <input type="checkbox"/> Illustration |
| <input type="checkbox"/> Reading Structural Blueprints | <input type="checkbox"/> Forging | <input type="checkbox"/> Boilingmaking | <input type="checkbox"/> Industrial Supervision |
| <input type="checkbox"/> Sanitary Engineering | <input type="checkbox"/> Heat Treatment of Metals | <input type="checkbox"/> Combustion Engineering | <input type="checkbox"/> Motor Traffic |
| <input type="checkbox"/> Structural Drafting | <input type="checkbox"/> Industrial Instrumentation | <input type="checkbox"/> Engine Running | <input type="checkbox"/> Postal Civil Service |
| | | <input type="checkbox"/> Marine Engineering | <input type="checkbox"/> Retailing |
| | | <input type="checkbox"/> Power Plant Eng'g | <input type="checkbox"/> Retail Bus. Management |
| | | | <input type="checkbox"/> Salesmanship |
| | | | <input type="checkbox"/> Sign Lettering |
| | | | <input type="checkbox"/> Spanish |
| | | | <input type="checkbox"/> Stenography |
| | | | <input type="checkbox"/> Steam Engr. |
| | | | <input type="checkbox"/> Traffic Management |

Name _____ Age _____ Home Address _____

City _____ State _____ Working Hours _____ A. M. to _____ P. M.

Present Position _____ Employed by _____

Length of Service in World War II _____ Enrollment under G. I. Bill approved for World War II Veterans. Special tuition rates to members of the Armed Forces. Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada.

mechanix illustrated

Title Registered U.S. Patent Office

september 1949

Cover photo by Grayson Tewksbury

special features

Gadgets Can Make Your Fortune	55
<i>By West Peterson</i>	
I Psychoanalyze Ghosts	58
<i>Dr. Nandor Fodor</i>	
Largest Plastic Mold	61
10,000 Miles Of Trouble	62
<i>By Nick D. Callaer, Chief of the Border Patrol</i>	
Jack Of All Trades	65
Three-Dimensional Showman	66
<i>By Roland Cueva</i>	
Auto Fuel From Cow Manure	68
<i>By Heinrich Hauser</i>	
Eccentric Cycles	70
Modelling A Queen	72
Money-Making Idea—She'll Sell You	
A Worm	74
<i>By George Laycock</i>	
MI Tests The Hydra-matic Lincoln	76
<i>By Tom McCahill</i>	
Auto Road Racing Comes Back!	78
<i>By Tom McCahill</i>	
Hit Or Miss?	82
<i>By Raymond R. Camp</i>	
This Month's Prize Gadget—	
Mailbox Camera	84
Home-Made Streamliner	85
They Blow Up Broadway	86
New In Science	88
Hobby Hall Of Fame—Chauncey G. Suits	89
New For The Home	90, 91
Arctic Pigmy Tank	92
<i>By Frank Tinsley</i>	
Your Invention Clinic	16
Editor's Workbench	26
Dear Editor	36

(continued on page 6)

A Fawcett Publication

Copyright 1949 by Fawcett Publications, Inc.

- W. H. FAWCETT, Jr. President
- ROGER FAWCETT General Manager
- RALPH DAIGH Editorial Director
- WILLIAM L. PARKER Editor

FEATURE STAFF

- GILBERT PAUST Feature Editor
- FRED HORSLEY Science Editor
- ARTHUR UNGER News Editor

CRAFTS & HOBBIES STAFF

- LARRY EISINGER Crafts & Hobbies Editor
- ROBERT BRIGHTMAN Photography Editor
- JOHN G. KINGDON Boating Editor

ART STAFF

- FRANK A. TAGGART Art Editor
- HAROLD E. KELLY Art Associate

JEAN C. IRWIN . In Charge of Production

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Printed in U.S.A. Editorial offices: 67 W. 44th St., New York 18, N. Y. Advertising offices: New York 18, 67 W. 44th St.; Chicago 11, 612 N. Michigan Ave.; Los Angeles, H. P. Houston, Edward S. Townsend Co., 643 S. Flower St.; San Francisco, Edward S. Townsend, Edward S. Townsend Co., Russ Building, General Office, Fawcett Building, Fawcett Place, Greenwich, Conn. Shepard Spink, Advertising Director; Roscoe K. Fawcett, Circulation Director; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Greenwich, Conn., under the act of March 3, 1879. Additional entry at Louisville, Ky. Copyright 1949 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to MECHANIX ILLUSTRATED, 67 West 44th St., New York 18, N. Y. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, Fawcett Building, Fawcett Place, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 15c per copy. Subscription price \$1.80 per year in Canada, the United States and possessions. Foreign subscriptions \$2.55 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds; payable at Greenwich, Conn. Advertising forms close 8th of second month preceding date of issue.

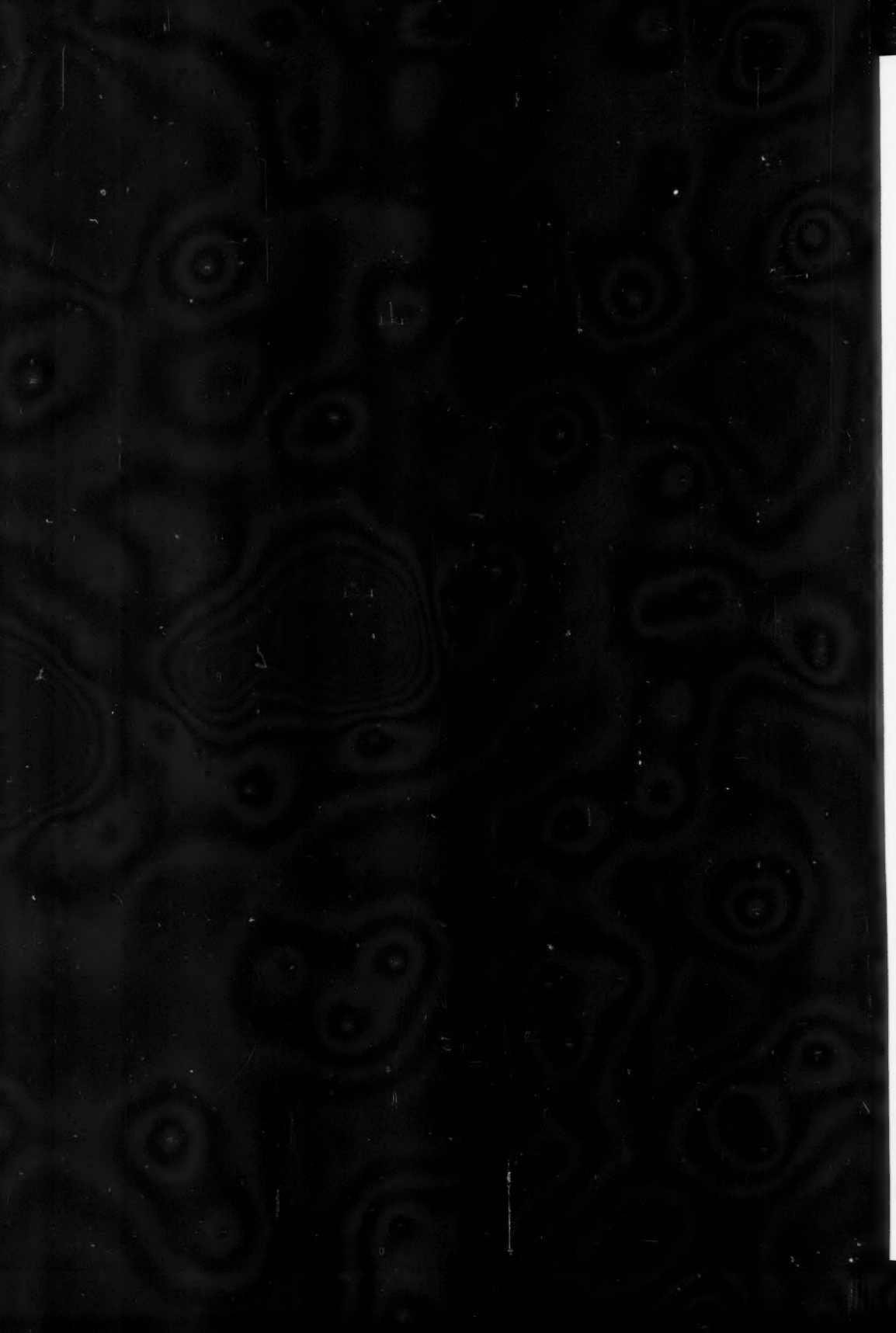
MEMBER AUDIT BUREAU OF CIRCULATIONS

September, 1949

President
Manager
Director
Editor
Editor
Editor
Editor
Editor
Editor
Editor
Editor
Editor
Associate
Production

Published
Fawcett
offices:
Adver-
th St. ;
: Los
msend
o, Bol
nd Co.,
Fawcett
Conn.
Roxce
Gordon
rector,
ost of-
act of
sville,
ations,
bilden
Title
dress
ATEL),
Y. All
erning
change
lation
Place,
r lost
ontri-
ed by
e per
ar in
sions,
oreign
ted by
States
Adver-
n pre-

U
S



AUDELS CARPENTERS & BUILDERS GUIDES—(4 Book Set).....\$6

A practical illustrated trade assistant on modern construction for carpenters, joiners, builders, mechanics and all woodworkers. 4 vols., 1600 pages, 3700 illustrations. Fully indexed, flexible covers. Each volume sold separately \$1.50 a vol.

AUDELS PLUMBERS & STEAMFITTERS GUIDES—(4 Book Set).....\$6

A Practical Trade Assistant & Ready Reference. Explains in plain language & by clear illustrations, diagrams, charts, graphs, pictures principles of modern plumbing practice including Marine Pipe Fitting and Air Conditioning. 4 Vols.—1670 Pages—3612 Diagrams & Illustrations. Each Vol. Sold Separately \$1.50 a Vol.

AUDELS OIL BURNER GUIDE.....\$1

384 Pages Covering Installation, Servicing & Repairs All Types Domestic & Industrial Burners. Illustrated. Highly Endorsed.

AUDELS HOUSE HEATING GUIDE.....\$4

1000 Pages Covering Working Principles, Installation, Service of All Modern House Heating, Ventilating & Air Conditioning Systems. Explains New Radiant Heating. Fully Illustrated & Indexed.

AUDELS REFRIGERATION & AIR CONDITIONING GUIDE.....\$4

New from Cover to Cover—1280 Pages, Fully Illus. Covering basic principles, servicing, operation & repair of household, commercial & industrial refrigeration & air conditioning. A gold mine of essential important facts for engineers, servicemen, users.

AUDELS SHEETMETAL WORKERS HANDY BOOK.....\$1

Practical inside information. Fundamentals of Sheet Metal Work. 388 pages, illustrated. 11 sections. Clearly written. Essential & important facts. Figures, diagrams, everyday language. Ref. Index.

AUDELS SHEETMETAL PATTERN LAYOUTS.....\$4

Developed by Experts for Sheet Metal Workers, Layout Men & Mechanics. A Practical Encyclopedia in 10 Sections, size 7 x 10 x 2—1125 Pages—350 Layouts—1600 Illustrations. 1001 Key Facts. Fully indexed for ready reference in answering your layout problems. Covers all phases of sheet metal work including Pattern Cutting, Pattern Development & Shop Procedure.

AUDELS BLUE PRINT READING.....\$2

For Mechanics & Builders. Covers all types of blue print reading including ship & airplane. 416 pages, fully illustrated.

AUDELS MATHEMATICS & CALCULATIONS FOR MECHANICS \$2

Mathematics for home study or reference. 700 pages, 550 illus. Practical mathematics from beginning. How to figure correctly. Easy, correct methods covering complete review. Illus. & Indexed.

AUDELS AUTOMOBILE GUIDE.....\$4

A practical quick ready reference book for auto mechanics, service men, operators & owners. Explains theory, construction & servicing of modern motor cars, trucks, buses & auto type Diesel engines. 1400 pages, fully illustrated. 55 chapters. Indexed. A standard book for mechanics. New Hydraulic drive covered.

AUDELS DIESEL ENGINE MANUAL...\$2

A practical, concise treatise with questions and answers on the theory, operation and maintenance of modern diesel engines. Over 400 pages, fully illus. All details plainly brought out, this book is of extreme value to engineers, operators & students.

AUDELS WELDERS GUIDE.....\$1

A concise, practical text on operation & maintenance of all welding machines for all mechanics. Over 400 pages, illustrated. Covers all methods of electric and acetylene welding including airplane work.

AUDELS MACHINIST & TOOLMAKERS HANDY BOOK.....\$4

Covers modern machine shop practice in all its branches. Tells how to set up & operate lathes, screw and milling machines, shapers, drill presses & all other machine & hand tools. 1600 pages, fully illustrated. Indexed. 5 sections. 1—Modern Machine Shop Practice. 2—Blue Print Reading & How to Draw. 3—Calculations & Mathematics for Machinists. 4—Shop Physics. 5—How to Use the Scribe Rule. 60 chapters. Easy to read and understand. A shop companion that answers your questions.

AUDELS ELECTRIC MOTOR GUIDE \$4

Practical Information Covering Construction, Control, Maintenance & Wiring Hookups of All Types Electric Motors also Armature Winding. 1000 Pages Fully Illustrated & Indexed.

AUDELS ELEC. WIRING DIAGRAMS \$1

210 Pages. Illustrated. Gives practical facts on wiring of electrical apparatus. It shows clearly how to wire apparatus for practically all fields of electricity. Each diagram is complete & self-explanatory. Highly Endorsed Pocket Companion.

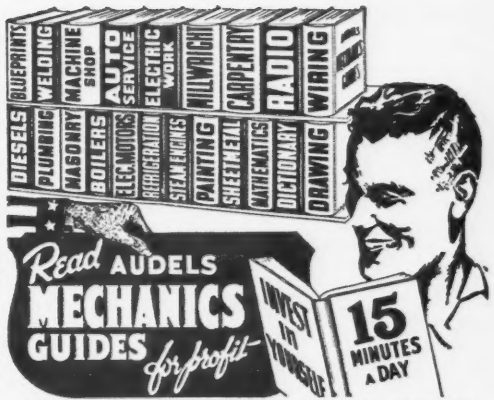
AUDELS PRACTICAL ELECTRICITY \$4

A key to a practical understanding of Electricity. For maintenance engineers, electricians & all electrical workers. 1440 Pages, 2600 Illus. Covers important electrical information in handy form—including wiring for Light & Power. Indexed.

AUDELS RADIOMANS GUIDE.....\$4

A key to the practical understanding of radio including Frequency Modulation, Television, etc., Aircraft & Marine Radio. For radio engineers, servicemen, amateurs. 914 Pages, 633 Illustrations & Diagrams. Photos. Review Questions & Answers, Reference Index.

AUDEL, Publishers, 49 W. 23 St., N.Y. 10



AN AUDEL GUIDE IS A GOOD FRIEND!

Step Up Your Own Skill with the Practical Facts and Figures of Your Trade. Save time and money with right methods, short cuts, labor saving ideas. CHECK NOW! You can look over any Au-del Guide in your home. Start the Easy Payments if satisfied.

CUT HERE MAIL ORDER

AUDEL, Publishers, 49 W. 23 St., New York 10, N. Y.

Please mail me for 7 days' free examination the books marked (X) below. I agree to mail \$1 in 7 days on each book or set ordered, and to further mail \$1 a month on each book or set ordered until I have paid the purchase price.

If I am not satisfied with Guides I will return them.

- AUTOMOBILE GUIDE, 1700 Pages \$4
- DIESEL ENGINE MANUAL, 400 Pages 2
- WELDERS GUIDE, 400 Pages 1
- CARPENTERS & Builders Guides (4 Book Set) 6
- PLUMBERS & Steamfitters Guides (4 Book Set) 6
- MASONS and Builders Guides (4 Book Set) 6
- BLUE PRINT READING, 416 Pages 2
- MASTER PAINTER & Decorator, 320 Pages 2
- GARDENERS & GROWERS GUIDES (4 Book Set) 6
- OIL BURNER GUIDE, 384 Pages 1
- HOUSE HEATING GUIDE, 1000 Pages 4
- REFRIGERATION & Air Conditioning Guide, 1280 Pages 4
- SHEET METAL WORKERS Handy Book, 388 Pages 1
- SHEET METAL PATTERN LAYOUTS, 1100 Pages 4
- AIRCRAFT WORKER, 240 Pages 1
- MECHANICAL DRAWING GUIDE, 160 Pages 1
- MECHANICAL DRAWING & DESIGN, 480 Pages 2
- MATHEMATICS and CALCULATIONS, 700 Pages 2
- MECHANICAL DICTIONARY, 968 Pages 4
- MACHINISTS & Toolmakers Handy Book, 1600 Pages 4
- MILLWRIGHTS & Mechanics Guide, 1200 Pages 4
- POWER PLANT ENGINEERS GUIDE, 1500 Pages 4
- ENGINEERS & FIREMANS EXAMINATIONS, 528 Pages 1
- PUMPS, HYDRAULICS & Air Compressors, 1658 Pages 4
- MARINE ENGINEERS Handy Book, 1280 Pages 4
- ENGINEERS and Mechanics Guides (8 Book Set) 12
- Answers on Practical ENGINEERING, 254 Pages 1
- ELECTRIC WIRING DIAGRAMS, 210 Pages 1
- ELECTRICIANS EXAMINATIONS, 250 Pages 1
- ELECTRIC DICTIONARY, 9000 Terms 2
- ELECTRIC MOTOR GUIDE, 1000 Pages 4
- PRACTICAL ELECTRICITY Handy Book, 1440 Pages 4
- ELECTRICAL POWER CALCULATIONS, 425 Pages 2
- RADIOMANS GUIDE, 914 Pages 4
- ELECTRONIC DEVICES, 216 Pages 2
- NEW ELECTRIC LIBRARY, 7000 Pages (12 Book Set) 18

Vols. I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII—\$1.50 Each

Name _____
 Address _____
 Occupation _____
 Employed by _____ MM

"THIS WISDOM MUST DIE!"



Truths That Have Been Denied Struggling Humanity

FOR every word that has left the lips of bishops or statesmen to enlighten man, a thousand have been withheld. For every book publicly exposed to the inquiring mind, one hundred more have been suppressed—*damned to oblivion*. Each year of progress has been wilfully delayed centuries. Wisdom has had to filter through biased, secret sessions or ecclesiastical council meetings, where high dignitaries of state and church alone proclaimed what man should know.

Are you prepared to demand the hidden facts of life? Will you continue to believe that you are not capable of weighing the worth of knowledge that concerns your personal freedom and happiness? Realize that much that can make your life more *understandable* and *livable* has been left unexplained or intentionally destroyed. At first by word of mouth only, and *now* by private discourses, are *revealed* those truths which secret brotherhoods preserved in ancient temples and hidden sanctuaries, from those who sought to selfishly deprive humanity of them.

THIS free BOOK OF EXPLANATION

Let the Rosicrucians, one of these ancient brotherhoods of learning, tell you about these amazing truths, and explain how you, too, like thousands of others, may now use them to enjoy the fullness of life. The Rosicrucians, (not a religious organization) invite you to use the coupon opposite and receive the **FREE** copy of the fascinating, Sealed Book, with its startling tale of *self help*.

The ROSICRUCIANS (AMORC)
SAN JOSE, CALIFORNIA, U. S. A.



Scribe I. B. L.
THE ROSICRUCIANS (AMORC)
Rosicrucian Park, San Jose, California, U.S.A.

Please send me your **FREE** Sealed Book. I am sincerely interested in learning how I may receive these long-concealed facts of life.

Name

Address

I WILL SEND YOU BOTH FREE

64 PAGE BOOK

Illustrated book tells how I give you practical experience with MANY KITS of Parts I send. Read how you make EXTRA MONEY fixing Radios in spare time while learning.

Read letters from men I trained, telling what they are doing and earning. See the fascinating jobs RADIO-TELEVISION offers. Book FREE with coupon below.



ACTUAL RADIO LESSON

Same coupon entitles you to actual lesson, "Getting Acquainted With Receiver Servicing" also FREE. Shows you that learning Radio-Television at home is easy, practical. Lesson tells how "superhet"

circuits work, three reasons why tubes fail, how to locate defects, repair loudspeaker, etc. Many pictures, diagrams. Get lesson FREE with coupon below.

GETTING ACQUAINTED WITH RECEIVER SERVICING

See for yourself how I train you at home to BE A RADIO-TELEVISION TECHNICIAN

Want a good-pay job in the fast growing RADIO-TELEVISION industry? Want a money-making Radio-Television shop of your own? Here's your opportunity. I've trained hundreds of men to be successful Technicians. . . MEN WITH NO PREVIOUS EXPERIENCE. My tested and proved train-at-home method makes learning easy. You learn Radio-Television principles from illustrated lessons. You get practical experience building, testing, experimenting with MANY KITS OF PARTS I send. All equipment yours to keep.

MAKE EXTRA MONEY IN SPARE TIME

The day you enroll, I start sending SPECIAL BOOKLETS that show you how to make \$5, \$10 a week or more EXTRA MONEY fixing neighbors' Radios in spare time while learning. From here, it's a short step to your own shop or a good-pay Radio-Television servicing job. Or be a licensed Radio-Television Operator or Technician.

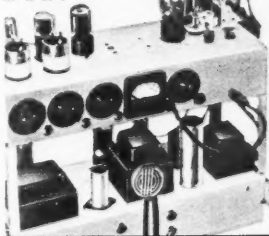
TELEVISION OFFERS BRIGHT FUTURE

Today there are nearly 2700 Radio stations on the air—and within three years experts predict there will be over 1000 Television Stations. Then add developments in FM, Two-Way Radio, Police, Marine, Aviation and Microwave Relay Radio! Think what this means. New job, more jobs, good pay for qualified men.

MAIL COUPON FOR BOOKS FREE

Act now! Coupon entitles you to actual lesson, "GETTING ACQUAINTED WITH RECEIVER SERVICING," and my 64-page book, "HOW TO BE A SUCCESS IN RADIO-TELEVISION."

Send coupon in envelope or paste on penny postal. J. E. SMITH, President, Department 9JH, National Radio Institute, Pioneer Home Study Radio School, Washington 9, D. C.



You Build This TRANSMITTER with Parts I Send

As part of my new Communications Course, you build this low-power Broadcasting Transmitter. You also build many other circuits with Kits of Parts I send you, that bring to life Radio-Television theory you learn.

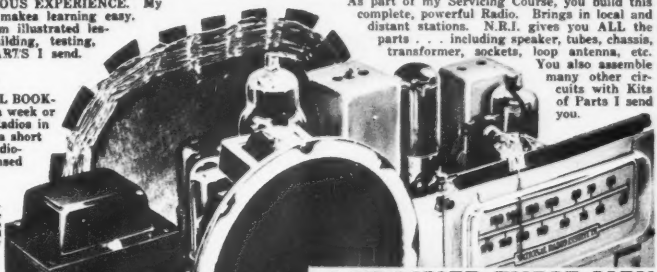
NEW

VETERANS

GET THIS TRAINING WITHOUT COST UNDER G. I. BILL

You Build This MODERN RADIO with Parts I Send

As part of my Servicing Course, you build this complete, powerful Radio. Brings in local and distant stations. N.R.I. gives you ALL the parts . . . including speaker, tubes, chassis, transformer, sockets, loop antenna, etc. You also assemble many other circuits with Kits of Parts I send you.



I TRAINED THESE MEN

"Today I am considered an expert Radio and Television Technician. Have 4 employees working for me." — Paul Miller, Toledo, O.

"Halfway thru N.R.I. course, I made about \$8 a week in spare time fixing Radios." — E. Streitenberger, New Boston, O.

"Was a bookkeeper with a hand-to-mouth salary. Now a Radio Engineer with ABC Network." — N. Ward, N. J.

"I have my own shop, am making more money now than ever before." — Curtis Staeth, Ft. Madison, Iowa.

Actual Lesson and 64 Page Book FREE

MR. J. E. SMITH, President, Dept. 9JH
National Radio Institute, Washington 9, D. C.

Mail me Sample Lesson and 64-page Book about How to Win Success in Radio-Television—both FREE. (No salesman will call. Please write plainly.)

Name _____ Age _____

Address _____

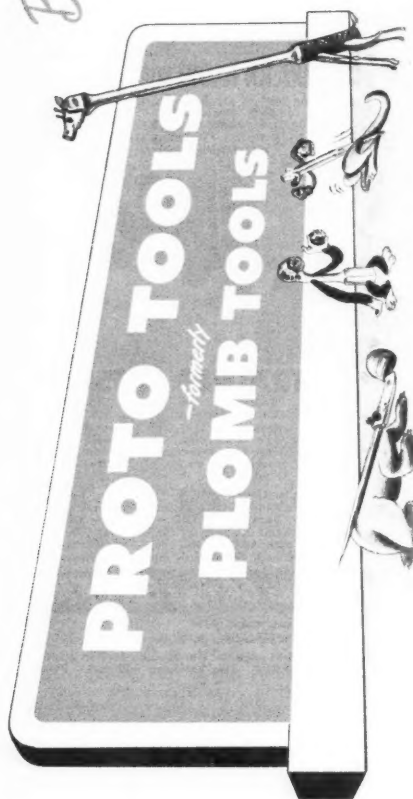
City _____ Zone _____ State _____

Check if Veteran Approved Under G. I. Bill

When Answering Advertisements, Please Mention MECHANIX ILLUSTRATED

Big News!

a different name for your old friends
 You will find **PROTO tools** — formerly **Plomb tools** — everywhere! Over 10,000 better class dealers display them. Since 1907, high quality, superior design and long life have made them the favorites of professionals. Remember, the new name — **PROTO tools**. Buy them from your dealer today.



Write for catalog to **PLOMB TOOL COMPANY** 2256N Santa Fe Ave., Los Angeles 54, Calif.

CRAFTS and HOBBIES

Contents continued from page 2

Workbench Award Winners	96
A Sundial For Your Garden	98
Machine A Beam Compass	100
Weekend Projects	102
Brick Laying	104
Goose Decoy	106
Dorena—A 26 Foot Motor Sailer, Part III	108
New For The Boatman	113
Radio Short Cuts	114
Car Care	116
How To Lay Asphalt Tile and Linoleum	118
Ichabod Model	122
Automatic Ventilator	126
Photo Contest	128
Photo Shorts	129
Spotlight With Your Slide Projector	130
Foolproof Rangefinder	131
Photo Stamp Printer	132
Darkroom Aids	135
Plywood Tray	137
Amateur Telescope Maker's Page . .	144

THESE MEN ARE GETTING PRACTICAL TRAINING IN **ELECTRICITY**



On Real:

**A.C. and D.C. MOTORS
GENERATORS
SWITCHBOARDS
CONTROLLERS
WIRING JOBS
APPLIANCES
ELECTRONIC UNITS**

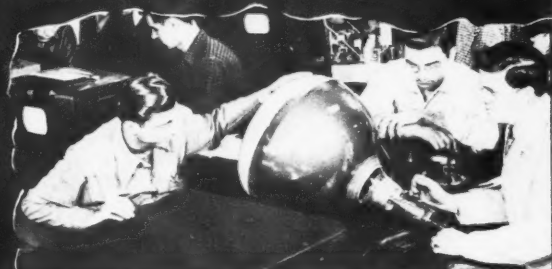
(Shown at left—Instructor demonstrating latest type of Test Unit for checking the efficiency of a Motor.)

AND **RADIO-TELEVISION**

On Real:

**TELEVISION SETS
RADIO RECEIVERS
F.M. (Frequency Modulation)
RECORD CHANGERS
AUTO RADIOS
AIRPLANE RADIOS
PUBLIC ADDRESS Systems**

(Right—Instructor explaining operation of 20-inch Cathode Ray tube used in Duromont Television Set.)



Just Like YOU Can Get in the Great SHOPS of COYNE

Prepare NOW for a real future the quick, practical way. Come to the Great Shops of COYNE in Chicago. Largest and best equipped school of its kind—now celebrating our 50th Anniversary. GI approved. Finance plan for non-veterans. Mail coupon.

NOT "HOME-STUDY" COURSES! At Coyne you learn on real, full-size equipment. Trained instructors show you how, then you do typical jobs yourself. We don't teach by mail.

CLIP COUPON NOW for big new illustrated Coyne book on either **ELECTRICITY** or **RADIO-TELEVISION**. Both books sent FREE if you wish. No obligation; no salesman will call. Get the facts now!

B. W. COOKE, Pres.
**ELECTRICAL &
RADIO SCHOOL**
800 S. Paulina St., Dept. 69-53H
Chicago 12, Ill.

Mail Coupon for
2 FREE BOOKS!



B. W. COOKE, President
**COYNE ELECTRICAL &
RADIO SCHOOL, Dept. 69-53H**
500 S. Paulina St., Chicago 12, Ill.

Send FREE, the book or books checked below, and details of your training offer. This does not obligate me and no salesman will call.

ELECTRICITY **RADIO-TELEVISION**

NAME

ADDRESS

CITY.....STATE.....

COYNE



When Answering Advertisements, Please Mention **MECHANIX ILLUSTRATED**



DIESEL is Going Places Come Along!

Yes, Diesel is a trade with a future. Look at the way trains, busses, boats, trucks, factories . . . everywhere . . . are changing to Diesel Power. It is going to take man power to keep the engines going. That means a great demand and great opportunities for the Diesel-trained man! That man can be YOU, if you are an average, ambitious, mechanically-inclined man.

KEEP YOUR JOB—LEARN AT HOME!

You don't have to give up your present job to learn Diesel. With U. E. I. training, you get complete fundamentals in practical, easy-to-understand home-study lessons. Includes operation, fuel systems, repairs, auxiliary equipment, etc. You may also get practical training in our modern, well-equipped shops. Experienced Diesel men show you short-cut methods, help you learn faster. High school diploma not necessary. Our 22nd year.

Success Demands Action, Act Now!

If you want to go places with DIESEL, act promptly. Fill out and mail coupon below for all the facts. No obligation. Do it AT ONCE!

Utilities Engineering Institute

Diesel Division, 2521 Sheffield Avenue
Dept. DJ-6, CHICAGO 14, ILLINOIS

UTILITIES ENGINEERING INSTITUTE

Diesel Division, 2521 Sheffield Ave.
Dept. D.J.-6, Chicago 14, Illinois

YOU BET, I want to go places with Diesel! Rush FREE FACTS on U. E. I. training and Diesel opportunities.

Mail Coupon Today for FREE FACTS

NAME _____ AGE _____

ADDRESS _____

CITY _____ ZONE OR COUNTY _____ STATE _____

Check here for special information if you are under 17.

Secure Your Future with 3 Careers in 1



WATCHMAKING



JEWELRY—
STONE SETTING



ENGRAVING

Each Trade can be a full-time job; together they assure numerous high paying opportunities, or a business of your own. Profit by the *Nationally Recognized Training Methods of the Kansas City School of Watchmaking.* Write today.

Clip and Mail this Coupon Today

KANSAS CITY SCHOOL OF WATCHMAKING
2nd Fl.—1228 Admiral Blvd.
Kansas City 6, Mo.

Please send me, without obligation, complete information on training in the above courses.

Name _____

Street _____

City _____ State _____

Check if Veteran. G. I. Approved

WHICH OF THESE Opportunities INTERESTS You MOST?

● Today, choose the job you want—and prepare for it. Or if you are already engaged in the work you like best, start training *now* for quicker promotion. Acquire the knowledge that will help you to get ahead faster, make more money and have greater security.

American School, founded in 1897 as an educational institution *not for profit*, can help you to reach your goal just as it has helped others during the past fifty-two years. Check the coupon at right, add your name and address and mail it at once. The school will send you details on its training plan and outline of study prepared by specialists. There is no charge, no obligation, so send the coupon immediately.

CHECK, CLIP AND MAIL COUPON NOW

AMERICAN SCHOOL, Dept. G628, Drexel at 58th, Chicago 37, Ill.
Without obligation, Please send FREE and postpaid, bulletin and details of the Subjects checked:

- | | | |
|--|---|--|
| <input type="checkbox"/> PLASTICS ENGR' | <input type="checkbox"/> Accounting | <input type="checkbox"/> Drafting and Design for Men and Women |
| <input type="checkbox"/> Refrigeration | <input type="checkbox"/> Electrical Engr. | <input type="checkbox"/> Radio |
| <input type="checkbox"/> Architecture and Building | <input type="checkbox"/> Electricity-Pract. | <input type="checkbox"/> High School |
| <input type="checkbox"/> Contracting | <input type="checkbox"/> Electronics, Industrial | <input type="checkbox"/> Air Conditioning |
| <input type="checkbox"/> Practical Plumbing | <input type="checkbox"/> Bookkeeping | <input type="checkbox"/> Mechanical Eng. |
| <input type="checkbox"/> Automotive Engr. | <input type="checkbox"/> Private Secretary | <input type="checkbox"/> Shop Management |
| <input type="checkbox"/> Aviation Drafting | <input type="checkbox"/> Diesel Engineering | <input type="checkbox"/> Tool Making |
| <input type="checkbox"/> Aviation | <input type="checkbox"/> Sheet Metal Pattern Drafting | <input type="checkbox"/> Better Foremanship |
| <input type="checkbox"/> Business Management | <input type="checkbox"/> Railway Training | <input type="checkbox"/> Machine Shop Operations |

Name _____ Occupation _____

Address _____ Age _____

City _____ State _____

AMERICAN SCHOOL

Dept. G628, Drexel at 58th Street, Chicago 37

INVENTORS

Learn how to protect your invention. The U. S. Patent Laws provide that any new and useful art, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if the act of invention is involved. Therefore, every inventor with a valuable invention should take advantage of the Patent Laws and proceed for patent protection in order to safeguard his rights.

A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

CLARENCE A. O'BRIEN & HARVEY JACOBSON

Registered Patent Attorneys

93-J DISTRICT NATIONAL BUILDING • WASHINGTON 5, D. C.

Patents

Trademarks

Copyrights

CLARENCE A. O'BRIEN & HARVEY JACOBSON
Registered Patent Attorneys

93-J District National Bldg., Washington 5, D. C.

Please send me copy of "Patent Guide for the Inventor" and also "Record of Invention" form. This request does not obligate me.

Name _____

Address _____

City _____ State _____

(Please write or print plainly.)

YOU Need My PRACTICAL Training to Make Money in

TELEVISION- RADIO and ELECTRONICS!



I'll Send You
8 BIG KITS of
Radio Parts and Equipment

Learn at
HOME
IN YOUR
SPARE TIME

Now is the Time to Get Into This Fast
Growing Industry—Prepare for a Fine
Paying Job or Your Own Business!

I have trained hundreds of men to become technicians—and I'm ready to do the same for you. Whether your goal is a fine paying job in one of Radio's many branches—or a successful Radio and Television business of your own—you need the kind of training I offer! My training is practical and down to earth. YOU NEED NO PREVIOUS EXPERIENCE. I start you with basic fundamentals and give you plenty of practical shop-bench training with many kits of parts I send you. This is the training that sticks with you and makes money for you on the job!



Each of the hundreds of Radio parts and other items I send my students is thefts "for keeps." You may use this equipment in your Radio and Television service work and save many dollars by not having to buy expensive "ready-made" test equipment.



CALVIN SKINNER of New Orleans, La. tells us he makes \$5 to \$10 in spare time repairing radios. He is now also working with a Television set.



LOREN D. SCHULER of Coloma, Mich. reports that my training has made it possible for him to repair large numbers of Radio and Television sets.

GET PAID FOR SPARE TIME WHILE LEARNING
Soon after you start training I send you my famous **BUSINESS BUILDERS** that show you how to make money in spare time doing interesting Radio jobs. I send you 8 big kits of Radio parts and equipment and help you build step-by-step a powerful 6-tube superhet radio, a 16-range test meter, plus other mighty useful equipment for Radio and Television servicing. You will perform over 175 fascinating experiments while training. You will learn about Television—so that you will be qualified to step into this fast growing, profitable field. I also send you many valuable service manuals, diagrams, and my book telling exactly how to set up your own Television and Radio shop. Clip and mail the coupon below for your own big **FREE** Radio books. I employ no salesmen—and nobody will call on you



HAVE A BUSINESS OF YOUR OWN

A profitable Radio and Television Service Shop may be started with little capital. I will show you how to get started. At left is pictured one of my graduates, Mr. Merrit C. Sperry, Fairmont, Minn. in his own shop.

Radio and Television Industry Booming

You couldn't pick a better time to get into Radio-Television and Electronics. New Television stations are going on the air to serve every major city—hundreds of new AM and FM Radio broadcasting stations are also on the air. All this creates new and bigger opportunities for the trained man who knows Radio-Television and Electronics

VETERANS

THIS TRAINING AVAILABLE TO YOU UNDER THE G.I. BILL

RUSH COUPON Today!

SPRAYBERRY ACADEMY of RADIO, Dept. 15-A
111 North Canal Street,
Chicago 6, Illinois

Please rush my **FREE** copies of "How To Make Money In Radio-Television and Electronics" and "How To Read Radio Diagrams and Symbols."

Name..... Age.....
Address.....
City..... State.....
() Check here if you are a Veteran

My Training Includes . . .
Television,
FM (Frequency Modulation),
Public Address and High Frequency Applications



These Two Big **FREE!** Radio Books

Just mail coupon for a **FREE** sample Sprayberry Lesson and my big **FREE** book, "How To Make Money In Radio-Television and Electronics." Learn why my really practical training is best of all for you. Discover what's ahead for you in Radio-Television and Electronics. No obligation. Don't delay! Mail the coupon now—and count on me for fast action.

SPRAYBERRY ACADEMY OF RADIO
111 N. CANAL, DEPT. 15-A, CHICAGO 6, ILL.

GET INTO

DIESEL-AUTO MECHANICS

Master All Phases

JOB'S LIKE THESE ARE AVAILABLE TO TRAINED MECHANICS. CHOOSE THE FIELD YOU LIKE BEST

Get Complete Training

- Diesel Fuel Injection
 - Automotive Motor Tune-up
 - Diesel Engine Rebuilding
 - General Garage Mechanic
 - Agricultural Implements
 - Auto Engine Rebuilding
 - Auto Elec. Service
 - Public Utilities
 - Parts Dealers
 - Bus & Truck Lines
 - Industrial Maintenance
 - Contracting & Excavating
 - Business of Your Own
- AND many other similar openings.

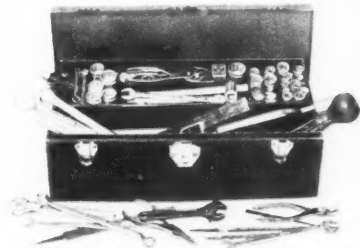
As a National Schools graduate, you are trained for ALL opportunities in the Diesel & Auto Industries

EARN WHILE YOU LEARN

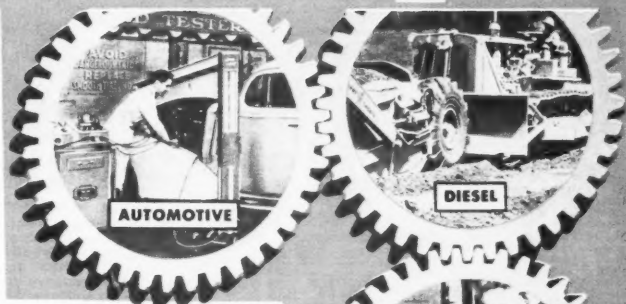
With our practical Master Shop-Method Home Training, you study at home in your spare time. You receive Spare Time Work Lessons, which show you how to earn while you learn . . . for extra money and experience. You learn by DOING.

TOOLS AND EQUIPMENT

To make your training complete, we give you selected mechanic's tools and equipment, illustrated below, including all-metal tool-box—as a regular part of your instruction.



WE GIVE YOU TOOLS OF YOUR TRADE



Shop-Method Home Training by an Established Resident School Prepares you for Many Good Jobs

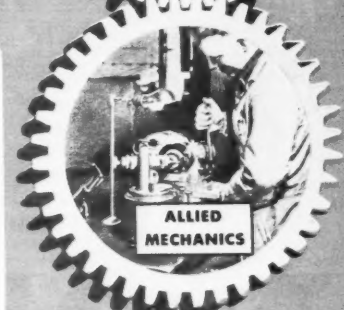
Opportunity is everywhere for the trained Diesel-Auto Mechanic. Highways throng with cars, busses, trucks, tractors. Garages and Service Stations are kept busy. Factories, ships, farms, railroads, general industry, are dependent upon engine power. Here's a dynamic, fast-growing field that needs trained men who know ALL phases: installation, operation, maintenance and repair. Now—National Schools offers you a practical, all-embracing Diesel-Auto Mechanic's Course, including all of these advantages:

Complete training, covering—Diesels, High Speed and Heavy Duty; Semi-Diesels, Gasoline and Special Fuel Engines AND Allied Mechanics.

- Basic Lesson Texts
- Diesel Installation
- Operation-Maintenance
- Diesel Chart Manual
- Spare Time Lessons
- Engine Service Manuals
- Engine Repair
- Drive Systems
- Diesel Electric Power
- Thermodynamics

TOOLS AND EQUIPMENT

INVESTIGATE
Secure Full Information
Both Resident and Home Study Courses Offered



NEW, ILLUSTRATED BOOK & SAMPLE LESSON SHOW HOW WE TRAIN YOU... SEND FOR THEM TODAY!



NO COST
NO OBLIGATION

APPROVED FOR VETERANS

Check coupon below

NATIONAL SCHOOLS

LOS ANGELES 37, CALIF. • EST. 1905

FIND OUT NOW... MAIL COUPON TODAY

NATIONAL SCHOOLS, DEPT. 9-MID
4000 South Figueroa Street
Los Angeles 37, California

(Mail in envelope or paste on penny postcard)

Mail me FREE the book, YOUR FUTURE IN DIESEL-AUTO MECHANICS, together with the Sample Lesson. I understand I may keep and use the information with no obligation.

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

Check here if Veteran of World War II D

When Answering Advertisements, Please Mention MECHANICS ILLUSTRATED

SURPLUS BARGAINS

ASSEMBLE YOUR OWN BINOCULARS!
Complete Optical Complete Metal Parts!
Save More Than 1/2 Regular Cost



GOVERNMENT'S 7x50 BINOCULARS

We supply Full Instructions

METAL PARTS—Set includes all Metal Parts—completely finished—for assembly of 7 X 50 Binoculars. No machining required. A sturdy Binocular Carrying Case is optional with each set of Metal Parts.
Stock #842-B \$39.40

Postpaid, plus \$1.80 for Case, \$44.20

—Total \$44.20

OPTICS—Set includes all Lenses and Prisms you need for assembling 7 X 50 Binoculars. These are in excellent condition—perfect or

near-perfect—and have new low reflection coating.
Stock #5102-B \$25.00 Postpaid
(These are standard American-made parts . . . not Japanese, French or German.)

NOTICE! If you buy both Binocular Optics and Binocular Metal Parts, add 20% Federal Excise Tax to above prices.
ARMY'S 8x39 BINOCULARS—We have complete Optics and Metal Parts. Write for Catalog B.

SLIDE PROJECTOR SETS—Consist of all unmounted lenses you need to make the following size projectors:

Stock #4038-B—2 1/4" x 2 1/2" \$3.35 Postpaid

Stock #4039-B—2 1/4" x 3 1/2" \$3.35 Postpaid

Stock #4035-B—35 mm. \$4.85 Postpaid

SIMPLE LENS KITS—THE LENS CRAFTERS DELIGHT! Fun for adults! Fun for children! Kits include plainly written, illustrated booklet showing how you can build lots of optical items. Use these lenses in photography for copying, **ULTRA CLOSE-UP SHOTS**, Microphotography, for "Dummy Camera," Kodachrome Viewer, Detachable Reflex View Finder for 35 mm. camera, Stereoscopic Viewer, ground glass and enlarging focusing aids. And for dozens of other uses in experimental optics, building **TELESCOPES**, low power Microscopes, etc.
Stock #2-B—10 lenses \$1.00 Postpaid
Stock #5-B—45 lenses \$5.00 Postpaid
Stock #10-B—80 lenses \$10.00 Postpaid

We have literally millions of war surplus lenses and prisms for sale at bargain prices. Write for Catalog "B"—Sent Free! Satisfaction Guaranteed Order by Stock No.

EDMUND SALVAGE COMPANY
P. O. AUDUBON, NEW JERSEY

The only paint spray that gives you

1 HORSEPOWER PERFORMANCE AT 1/3 HORSEPOWER COST



Binks PORTABLE
PAINT SPRAY
(DP* unit)

Brand new! Just out after exhaustive field and laboratory tests. Now you can have a really "professional" paint spray made by BINKS, manufacturers of world famous industrial spray equipment.

Compressor weighs only 47 lbs. but delivers 1 h.p. spraying performance for cost of only 1/3 h.p. unit. Built for easy portability—even up a ladder. For serious finishing, maintenance, craftwork, farm jobs, light production. Handles any finish from undercoater out Supersate; all moving parts enclosed. GUARANTEED. Operates on 110-120 v., A.C. Gives 40 lbs. pressure.

Free literature. Send today for free folders telling all about the BINKS new DP compressor, gun, and accessories. Or ask your local dealer to show it to you.

*DP means Direct-drive Piston.



Binks MANUFACTURING COMPANY
Dept. DP3, 3114 Carroll Ave., Chicago 12, Illinois

YOU are in demand if you can DRAW!



Make Money with Your Brush and Pen

If you like to DRAW, SKETCH,
or PAINT, write for TALENT
TEST. NO FEE!

ART INSTRUCTION, INC. • DEPT. 9069, MINNEAPOLIS 15, MINN.

Please send me your FREE Talent Test

Name _____ Occupation _____

Address _____ Phone _____

City _____ Zone _____ County _____ State _____ Age _____

INVENTORS

Patent laws encourage the development of inventions.

We recommend that an inventor employ a registered Patent Attorney or agent, if the inventor is not familiar with patent matters. This is because the value of a patent depends largely upon the skillful preparation of the specification and claims in the patent application.

The firm of McMorrow, Berman and Davidson is registered to practice before the United States Patent Office. Additionally it engages patent attorneys able to readily understand inventors' disclosures, to advise concerning patentability, and to prepare appropriate specifications and claims.

If an inventor believes he has an invention, a search of the most pertinent prior U. S. patents should be made and a report obtained relative to its patentability. Where such report indicates that the invention appears patentable, in order to secure protection, diligence should be exercised in making application for a patent.

Send for a copy of Patent Booklet entitled "How To Protect Your Invention." This booklet contains information on patent protection and procedure. You will also receive an "Invention Record" blank. This will be promptly forwarded to you upon request—no obligation.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

PATENTS • TRADE MARKS • COPYRIGHTS

1393 VICTOR BUILDING, WASHINGTON 1, D. C.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

1393 Victor Building, Washington 1, D. C.

Send me your Patent Booklet, "How To Protect Your Invention", and also "Invention Record" form at once. I understand this request does not obligate me.

Name.....

Address.....

City.....

(WRITE OR PRINT NAME CLEARLY)

When Answering Advertisements. Please Mention MECHANIX ILLUSTRATED

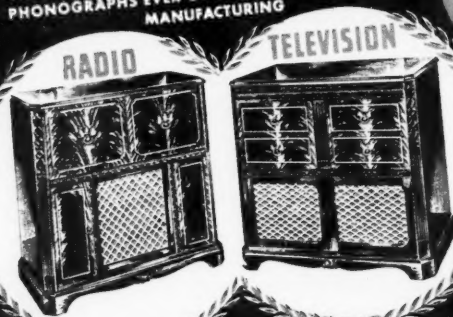
New 1950
MIDWEST TELEVISION
 with *New Giant* 16" PICTURE
 Direct From Factory to You... At Low Factory Prices

Send For This
FREE
 32 Page—4 Color
CATALOG

MIDWEST

Presents for 1950
 THE MOST MAGNIFICENT NEW LINE OF
 CUSTOM DESIGNED TELEVISION, RADIOS and RADIO-
 PHONOGRAPHS EVER OFFERED IN ITS 30 YEARS OF
 MANUFACTURING

**30
 DAYS
 TRIAL**



**ANNIVERSARY
 YEAR**

1920 - 1950

RADIO-TELEVISION

A Pioneer in RADIO
 ELECTRONICS and TELEVISION
 Since 1920

EASY TERMS · 30 DAYS TRIAL · LOW FACTORY PRICES

**DIRECT FROM
 FACTORY
 and SAVE!**

**NEW LOW
 DOWN PAYMENTS**

**FACTORY
 TO YOU
 PRICE**

**NO
 Middlemen's
 Profit**

**EASY
 TERMS**

**SEND
 THIS
 COUPON
 TODAY**

Write in Name and Address (Please
 Print) on Coupon or 1c Postcard.

Also a Complete Line of NEW 1950
MIDWEST RADIOS
 featuring the New Long Distance FM Circuit
 and New 3-SPEED PHONOGRAPH

MIDWEST RADIO & TELEVISION CORP.

MIDWEST RADIO & TELEVISION CORP.
 Dept. X411, 909 Broadway, Cincinnati 2, Ohio

Please send me your new FREE 1950 Catalog.

NAME _____
 ADDRESS _____
 CITY _____ ZONE _____ STATE _____

Dept. X411 909 Broadway Cincinnati 2, Ohio

How to CLIMB FASTER...

Put "wings" on your ability—
Train at home thru C. T. I. !

ONE of the most valuable rewards that a grateful nation offers veterans for the time they spent in military service is tuition-paid training. Thousands of veterans have already graduated from C.T.I. under the G.I. bill. As the following comments from unsolicited letters testify, C.T.I. students, veterans and non-veterans alike, learn their trades thoroughly and reap rich benefits—often within a few months:

"Since the news got around that I was a student with C.T.I., I have been offered three jobs paying over \$85.00 a week." . . . "When I was on my 34th lesson, I quit my job and started a business of my own, and I'm doing fine." . . . "I enjoy every lesson and am learning more than I ever thought possible by correspondence. I have one man working for me now and I am looking forward to having a bigger and better business soon, thanks to C.T.I." . . . "I have almost finished my course and I give all the credit in the world to C.T.I. home study. I never would have been able to have my own business if it had not been for your training." . . . "Thanks to my C.T.I. lessons, I have won the respect of my bosses and the right to hold my head a little higher than before." . . . "Another valuable benefit that I received from C.T.I. schooling is the habit of learning. Now I feel there is no limit to what I can accomplish in this life."

If you are mechanically inclined, you may prepare yourself to do as well, if not better. And you can do it at home in your spare time through C.T.I.! So, choose your favorite trade from the opportunities listed in coupon below. Then write C.T.I. or mail coupon for a big, illustrated FREE BOOKLET. Do this today.

COMMERCIAL TRADES INSTITUTE

1400 Greenleaf Dept. E3-9 Chicago 26, Ill.

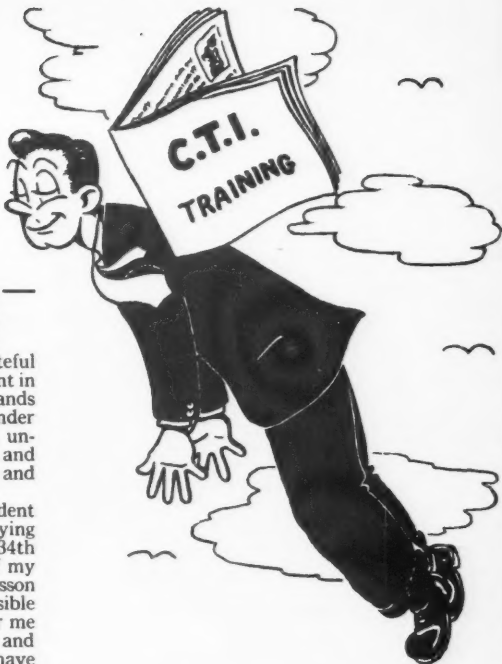
FILL OUT - CUT OUT - MAIL TODAY

Mr. R. C. Anderson, President
COMMERCIAL TRADES INSTITUTE, Dept E3-9
1400 W. Greenleaf, Chicago 26, Ill.

Send free illustrated Brochures and other information about the field I have checked below:

- Veteran Non-Veteran
- Automotive Mechanics Electricity & Electronics
 Body & Fender Rebuilding Radio & Television
 Diesel Mechanics Building Construction
 Refrigeration & Air Conditioning Mechanical Drafting

Name _____ Age _____
 Address _____
 City _____ State _____



PREPARE NOW FOR RAPID PROMOTIONS OR FOR A BUSINESS OF YOUR OWN

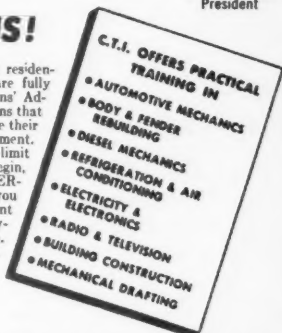
Until you are thoroughly trained, you are not likely to progress very far either in industry or "on your own." Once you begin study, however, your goal can be just a few months away. So, get out of the "indefinite" stage. Make up your mind to go ahead—and stick to your decision. Remember, you can't go unless you get started.



R. C. Anderson
President

VETERANS!

All C.T.I. courses, both residential and home study, are fully approved by the Veterans' Administration—which means that eligible veterans will have their tuition paid by the government. Remember, there's a time limit on when training must begin, so act now. NON-VETERANS—We'd like to tell you about our Easy-Payment Finance Plan and Pay-After-Graduation Plan. Write for information.



GET THE FACTS —
ACT TODAY!

HOME OF C.T.I.



YOUR INVENTION CLINIC

Conducted by Joseph H. Kraus

Evaluating an Invention

"How much do you think I should get for this invention?" is a question asked by many readers.

While no set answer can be given, the inventor is in a position to do some estimating himself.

Many inventors claim to have an idea. Some of these are nebulous thoughts, neither worked out nor tested. Just something which has been jotted down on paper or dreamed up. At this stage the inventor doesn't know if he has anything original. The fact that he has never seen anything like it anywhere cuts no ice at all. There are thousands of ideas which have never been successfully sold.

To investigate the subject properly, the inventor should request his patent attorney to have the records searched. The cost is nominal. Soon the attorney will furnish a report indicating that (a) there may be a possibility or (b) there is no possibility of protecting the thought. In the first eventuality, those patents most closely resembling the new idea are furnished with a report to the inventor. In the latter case, the attorney includes copies of patents having claims sufficiently broad to cover the thought disclosed by the inventor. If the thought is new, the inventor has several avenues of action open to him, all leading eventually to patent protection. On the other hand, if the report was negative the inventor may feel that either his idea has been anticipated or that he has something so novel and so much better, that he still thinks he has a good chance at getting the desired protection. He outlines the differences to the attorney.

Improvement Patents

At this point, the attorney may feel that there's a possibility of an improvement patent. Or, he may decide that the claims allowed to the other inventors do not adequately cover the present case. However, the attorney may hold that the inventor has not introduced sufficient novelty to allow for a reasonable chance of protecting the idea and will so inform the inventor. Perhaps, in this type of issue, another attorney may have a different opinion as to patentability. Chances are not too good, though.

This report on a search, whether promising or not, has not increased the value of the invention one iota.

Chances are that the man with the improvement can do nothing with the idea without first purchasing certain rights from the first inventor. It may be that the improvement is the thing which the original invention needed to make it industrially useful. But, no matter. Unless the man with the improvement can contact the first inventor and purchase his rights or enter into a cross-licensing agreement, he has nothing saleable.

Value of Patentable Inventions

Let's assume that the attorney reported that he thought the idea presented was patentable. How much would this increase the value?

Still nothing, in most cases. While it is true that unpatented ideas have been sold for considerable sums, actually the sales were the result of excellent contacts. But, on the whole, this is a rare and lucky situation. The safest procedure is to get the patent. Then, the grounds on which suit can successfully be prosecuted are disclosed in the grant. There no longer is any question about imaginary values. Everything claimed is down on printed paper, stamped with a government seal.

Let's say that the inventor has gotten over all the hurdles and patented his idea. What's it worth now? Still nothing.

Thousands of patents have been granted which cannot be sold for the cost of the paper on which they were printed. Some large corporations holding many patents value them according to the amount of money needed to patent them. Others hold them on inventory at a dollar for the lot or apply to them the cost of the research which entered into the effort leading to the final patent grant. In the writer's opinion, anything which does not return a dividend either direct or indirect is as worthless as a German Mark of World War I.

An invention should not have the inventor's assumed worth. It must have an actual exchange value. Until it is sold, it does not have such cash surrender usefulness.

Admittedly, wishful thinking may run up the estimated worth of a patent from a few cents to huge sums. This does not depend on

[Continued on page 18]

See how YOU may get started toward an Exciting Future in

TELEVISION! RADIO-ELECTRONICS!



MODERN CHICAGO LABORATORIES

Train quickly, using a wide variety of commercial equipment. D. T. I.'s new laboratories are among the finest of their kind. Ample instructors . . . every major training advantage. Write for details!

EMPLOYMENT SERVICE

When you complete your training, our effective Employment Service is available to you without extra cost—a grand aid to help you get started.

YOU ALSO USE HOME MOVIES
a D.T.I. Exclusive!

D. T. I., alone, includes the use of one of today's most effective training aids . . . MOVIES . . . to help you learn important fundamentals faster, easier, at home. What an advantage to see electrons on the march, and other fascinating "hidden action" — a remarkable home training advantage that speeds your progress.

OUR GREATEST OFFER IN 17 YEARS!

Here is your big opportunity to get started toward FASCINATING WORK . . . GOOD MONEY . . . a THRILLING FUTURE! Mail the coupon today. See how YOU may prepare to tie in your future with a field that includes one of America's fastest-growing new industries—Television. You'll find out, too, about the many other thrilling opportunities in FM Radio . . . Aviation and Broadcast Radio . . . 2-Way Taxi, Truck and Police Radio . . . Industrial Electronics . . . even the chance to start your own profitable Television-Radio Sales and Service business. And to top it all, you'll see that you don't need to know a thing about this subject at present—that NOW you can get the very training and starting help you need by means of our GREATEST OFFER IN 17 YEARS.

Send for FREE Information

See HOW—in your own home—DeForest's Training, Inc. now brings you one of today's most complete combinations of major home training aids. You (1) Learn-by-Reading from well-illustrated lessons. (2) You Learn-by-Seeing from D.T.I.'s exclusive instructive Home Movies. And (3), you set up your own HOME LABORATORY where you Learn-by-Doing from 16 shipments of Radio-Electronic parts which you use and KEEP to work over 300 instructive . . . fascinating projects. This includes building the valuable 6 tube "Superhet" RADIO and the commercial-type OSCILLOSCOPE, R-F SIGNAL GENERATOR, and Jewel-Bearing MULTIMETER, pictured at the right.

You may use this test equipment to help you earn real money—both in your spare time and later when working full time in the field. Get complete facts. Mail coupon today!

YOU BUILD and KEEP THIS EQUIPMENT TO WORK OVER 300 HOME EXPERIMENTS



DeFOREST'S TRAINING, INC.

CHICAGO 14, ILLINOIS

Affiliated with the DeVry Corporation,
Builders of Electronic and Movie Equipment.

OPPORTUNITY COUPON!

DeForest's Training, Inc.
2533 N. Ashland Ave., Dept. M1-F9
Chicago 14, Illinois

MAIL TODAY

Without obligation, send me complete facts showing how I may make my start in Television-Radio-Electronics.

Name Age

Street Apt.

City Zone State

INVENTORS-PATENTS

Unless an inventor is thoroughly familiar with such matters, he is advised to employ a competent registered patent attorney or agent as the value of patents depends largely upon the skillful preparation of the specification and claims.

For his guidance, the following are the usual preliminary steps which the inventor takes toward patent protection.

The "Evidence of Invention" form mentioned below is offered as a convenience to the inventor in making his disclosure of invention.

The inventor should date and sign his disclosure and have it witnessed by two or more persons who are capable of understanding his invention. The disclosure should then be mailed to the registered patent attorney or agent whom he selects to assist him. The disclosure should be accompanied by a letter authorizing the patent attorney or agent to conduct a preliminary search among previously granted U. S. patents for similar types of invention. The patent attorney or agent then prepares a report of the probable patentability of the invention and recommends the further course the inventor should take, provided the report indicates possible patentability.

This firm is registered to practice before the U. S. Patent Office and is available to assist inventors in the preparation and prosecution of their cases. The coupon below is suggested as a convenience to the inventor in starting action on his invention.

VICTOR J. EVANS & Co. *Merlin M. Evans*
 REGISTERED PATENT ATTORNEY
 450-K MERLIN BUILDING, WASHINGTON 6, D. C.

- • • • •
- VICTOR J. EVANS & CO. •
- 450-K Merlin Building, Washington 6, D. C. •
- Please send me without obligation a copy of your •
- booklet "Patent Protection For Inventors" together •
- with your convenient "Evidence of Invention" form. •
- Name..... •
- Address..... •
- City and State..... •
- • • • •

PATENTS TRADEMARKS COPYRIGHTS

Your Invention Clinic

[Continued from page 16]

the invention, but on what the purchaser who is seeking to acquire the interest, thinks it is worth. This is where the greatest problem of how much can be expected from the invention comes in.

Dime-a-Dozen Ideas

Remember that ideas are a dime a dozen. There is no premium on brains. Actually, the inventor has usually invested only a little thought and several hundred dollars. On occasion, he may have done a lot of research or he may have spent considerable sums in building working models, but these are the exceptions.

Appraise the actual time spent on the basis of the dollars per hour the inventor might get for his services if they were devoted to an ordinary job. Add all costs for models and other expenses. Don't include time spent in dreaming of how to spend the thousands of dollars the invention will bring in.

In the average case, considerably less than \$1000 will cover the value of both time and money. Let's accept this as a figure for discussion.

Now, what is a good return on \$1000? Many businessmen would be satisfied with 6 per cent, but not the inventor. He usually expects from 1000 to 10,000 per cent. Sometimes he gets it!

Yet, on the whole it will be better for him to examine his position reasonably. He had an idea and patented it. Now he must depend on others to produce, market, sell, or otherwise show a profit from it.

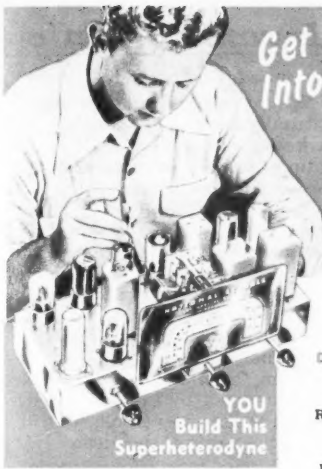
The manufacturer must pay for the factory, its overhead, the tools for fabrication, the cost of the materials, the advertising, publicity, promotion and sales. He must stand the loss in shipment, rejects, bad debts and innumerable other things as well as risk the chance that nothing better may be forthcoming prior to the time he gets his investment back.

If the inventor could be assured of recovering his original investment, plus a small sum of money periodically and be further guaranteed of production and introduction of the article to the public within a reasonable time, he should gamble with the manufacturer on the basis of a percentage on each item sold.

Some manufacturers are even reticent to give an inventor any promise of a cash return. It's my opinion that if the idea is worth considering, it should be worth a small investment.

If for no other reason, this assures the inventor that the company which contemplates the manufacture of his invention shows

[Continued on page 20]



Get
Into

RADIO, TELEVISION and ELECTRONICS

Master ALL Phases

YOU
Build This
Superheterodyne

You receive complete standard equipment, including latest type High-Mu Tubes, for building various experimental and test units. You progress step by step until you build a complete Superheterodyne Receiver. It is yours to use and keep.



YOU RECEIVE THIS PROFESSIONAL MULTITESTER!

You will use this professional instrument to locate trouble or make delicate adjustments—at home—on service calls. You will be proud to own this valuable equipment. Complete with test leads.



R. F. OSCILLATOR:

This is one of the interesting units you will build. You learn how audio-frequency energy is generated and radiated by a vacuum-tube circuit.

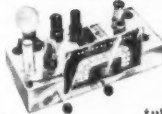
AUDIO OSCILLATOR:

An electronic device, which produces audio-frequency signals for modulating R.F. (radio frequency) carrier waves, testing A.F. (audio frequency) amplifiers, speakers, etc.



T.R.F. RECEIVER

You build several T.R.F. Receivers, one of which, a 4-tube set, is shown here. You learn construction, alignment, make receiver tests, and do trouble shooting.



Get Complete Training. You Receive and Keep All Equipment, Parts and Lessons. No Extra Charges.

GOOD PAY
and Unlimited Opportunities
in JOBS LIKE THESE:

Business of Your Own
Radio Manufacturing, Sales, Service.
Broadcasting, Telecasting
Television Manufacturing,
Sales, Service
Laboratories: Installation, Maintenance of Electronic Equipment, Electrolysis, Call Systems
Garages: Auto Radio Sales, Service
Sound Systems and Telephone Companies; Oil Well and Drilling Companies; Engineering Firms
Theatre Sound Systems Police Radio
And scores of other good jobs
in many related fields

YOU CONDUCT MANY
EXPERIMENTS LIKE THESE!

Checking action of condensers
Experiments with cathode-ray principles
Experiments with resonance
Producing beat frequencies
Calibrating oscillators
Experiments with diode, grid-bias, grid-leak and infinite impedance detectors
Practical experience in receiver trouble shooting
Application of visual tester in checking parts and circuits
Experiments with inverse feed-back
Advanced trouble-shooting
... and many, many others

Complete Training by Practical Resident Trade School, Est. 1905

The same highly trained faculty, instruction materials and methods used here in our large, modern residence school, are adapted to your training in your own home. Shop Method Home Training has been proved by hundreds of successful graduates.

Both Resident and Home Study
Courses Offered

YOU LEARN BY DOING

You receive special laboratory experimental lessons to show you how to build with your own hands various experimental units such as those shown at left, and how to conduct many tests.

You will find all lessons easy to understand because they are illustrated throughout with clear diagrams and step-by-step examples that you work out yourself. Every piece of the equipment and complete lesson material we send you is yours to keep and enjoy, including the multimeter, experimental equipment, all parts of the Superheterodyne, tube manual, radio dictionary, and complete, modern Television texts. All parts are standard equipment.

Shop Method Home Training . . . Earn While You Learn

With our practical resident Shop Method Home Training, you study in your spare time. You receive Spare Time Work Lessons, which show you how to earn while you learn. Service neighbors' radios and TV receivers, appliances, etc., for extra money and experience. Many National students pay all or part of their training with spare time earnings!

DON'T DELAY! The Radio-Television Industry needs trained men NOW!

APPROVED
FOR
VETERANS!
Check coupon below!

For quick action,
mail coupon
today and we'll
rush you full information.

Free!

NEW, ILLUSTRATED
OPPORTUNITY
BOOK AND SAMPLE
LESSON SHOW YOU
HOW WE TRAIN
YOU . . . SEND FOR
THEM TODAY! NO
COST. NO
OBLIGATION.

NATIONAL SCHOOLS

LOS ANGELES 37, CALIF. • EST. 1905

FIND OUT NOW . . . MAIL COUPON TODAY

National Schools, Dept. 9-MI
4000 South Figueroa Street
Los Angeles 37, California

Mail in envelope
or paste on
penny postal.

Send me your FREE book "Your Future in Radio" and the sample lesson of your course. I understand no salesman will call on me.

NAME _____ AGE _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Check here if Veteran of World War II

INVENTORS

When you are satisfied that you have invented a matter of value—write me, without obligation, for full information as to what steps you should take to secure a Patent.

The usual first step is to have a search of the prior U. S. Patents conducted, so that I can report to you on the question of Patentability.

PATRICK D. BEAVERS
(Formerly RANDOLPH & BEAVERS)

Registered Patent Attorney

923 Columbian Building Washington 1, D. C.

PATRICK D. BEAVERS, Registered Patent Atty.
923 Columbian Bldg., Washington 1, D. C.

Please send me full information on how to secure Patent Protection and Trademark Registration.

Name

Street

City..... State.....

INVENTORS

**IF YOU WISH TO PROTECT
YOUR INVENTION**

**YOU SHOULD TAKE STEPS
TO PROTECT IT BY A U.S. PATENT**

**WRITE ME FOR
"RECORD OF INVENTION" FORM**

CARL MILLER
REGISTERED PATENT ATTORNEY

WOOLWORTH BUILDING, 35th FLOOR, 99B
NEW YORK CITY

Please send me "Record of Invention" Form

NAME

ADDRESS

Your Invention Clinic

[Continued from page 18]

enough good faith to make an investment and hence will naturally seek to get this back by the early marketing of the product. Usually, large corporations do keep in mind the value of keeping the good faith of the inventor.

But, in any such case, the inventor should be sure to have his attorney read over any arrangements. Incorporated into such a contract should be a clause giving the inventor the right to recapture if the terms of the agreement are not lived up to.

He should investigate the standing of the company with which he's going to deal, negotiate with them, then have the contract drawn up and examined by his own lawyer. But he should be willing to gamble with the manufacturer on the value of the idea.

Personal Evaluation

There are many other methods of arriving at the value of an invention. Determine, by your own or market analysis, how many of the items are likely to be sold per year. Establish the price of manufacture, then multiply this by five to get the selling price.

Because the average inventor does not know what the overhead and other costs would be, it is advisable to take the blueprints of models to a factory making similar products and get an estimate of production costs on the basis of 10,000 or more.

Now, try to discover how many people would use the article at four times this cost. (Note that the original figure was five times the actual cost, but the manufacturer's price given to you includes a profit to him. So, multiply the price by a factor of four here.)

At this point, show the article in model form to the first hundred people you meet and inquire if they would purchase the item at the quoted price. See how many sales you might make. Multiply that percentage of total population and you have the possibilities. But, divide by a 100 to come closer to reality.

Or, ask a number of dealers how many they would purchase at 40 per cent off from the established retail price.

Striking a Bargain

This now brings you to the place where you can do some real bargaining.

You now know how much the article would cost and how many potential customers you can expect. Base your income at from a tenth of a cent per unit to a flat five per cent of the sales price. Use this figure to establish the price for sale of the invention.

[Continued on page 24]

Now Any AUTO REPAIR JOB Can Be a "Push-Over" for You!

Free
7-DAY OFFER!



IN LESS TIME—WITH LESS WORK—AND MORE PROFITS!

NOW, tackle anything from carburetor to rear end on ANY car built from 1935 thru 1949. And fix it quick, easy, right the FIRST time! Just look up make, model, and job in quick index of MoToR's brand-new AUTO REPAIR MANUAL. Clear, illustrated instructions lead you step by step all the way.

ONLY Manual of Its Kind!

The engineer-editors of MoToR Magazine condensed all the meat of over 150 official factory manuals for you. They dug out all the information you need—made sure every word and picture is crystal clear—and put the whole "works" into this one big 795-page book. Contains 200,000 service, repair, tune-up facts. 35,000 essential dimensions! More than 2100 cut-away photographs, diagrams, charts show what the clear text tells.

Used by
U. S. Army
and Navy

COVERS ANY CAR BUILT SINCE 1935!

- Auburn
- Austin
- Buick
- Cadillac
- Chrysler
- Chrysler
- Cord
- Crosley
- De Soto
- Dodge
- Ford
- Frazer
- Graham
- Hudson
- Hupmobile
- Kaiser
- Lafayette
- La Salle
- Lincoln
- Mercury
- Nash
- Oldsmobile
- Packard
- Pierce
- Arrow
- Plymouth
- Pontiac
- Reo
- Studebaker
- Terraplane
- Willis

Win Prestige! Earn More Money!

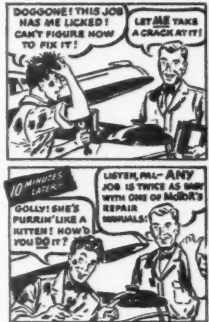
MoToR's Manual makes every operation so easy that you'll find yourself tackling jobs you wouldn't think of doing before. And you'll win added prestige and more money in the bargain.

Beginners will find usable helpful guidance on every kind of repair and service job imaginable. Experts will be amazed by the time and labor-saving short cuts.

This GIANT Manual is used by Army, Navy, Technical Schools, and thousands of successful auto-repairmen. Now YOU can try it FREE—for 7 days. Learn firsthand how it can pay for itself the first few times you use it!

SEND NO MONEY

Mail coupon below — without money! When your book arrives — make it show you what it's got! Unless you agree it's the greatest time and work saver you've ever seen — return book in 7 days and pay nothing. Mail coupon NOW! MoToR Book Department, Desk 39, 250 West 55th Street, New York 19, N. Y.



Just 2 of the Many Letters of Praise



"MoToR's Manual paid for itself on the first 2 jobs, and saved me valuable time eliminating guesswork." — W. SCHROF, Ohio



"Instructions so clear have no trouble learning anything about any car. Now working as mechanic in big plant." — SAM ORDONEZ, California



ABOVE: Showing operation of Buick Dyno-Flow — and, BELOW: How to adjust Ford Clutch. Every moving part is covered in simple words and BIG, CLEAR Pictures.

Same FREE Offer on MoToR's TRUCK MANUAL

Covers EVERY job on EVERY truck made from 1936 thru 1946! 1400 pictures, 932 pages, 300,000 facts. All types Gasoline Engines, Truck Diesels, Hesselmans, Fuel Systems, Governors, Lubrication, Ignition, Starters, Clutches, Axles, Brakes, etc., etc.

Also covers many buses, tractors, contractor and road building equipment, stationary power machinery. Check box in coupon at right for 7-day FREE trial.



Published by MoToR, The Leading Automotive Business Magazine.



MAIL COUPON NOW FOR 7-DAY FREE TRIAL

MoToR BOOK DEPT.
Desk 39, 250 West 55th St., New York 19, N. Y.

- Rush to me at once (check box opposite book you want):
- MoToR's NEW AUTO REPAIR MANUAL. If O.K., I will remit \$1 in 7 days (plus 35c delivery charges), \$2 monthly for 2 months and a final payment of 95c one month after that. Otherwise I will return the book postpaid in 7 days. (Foreign price, remit \$5 cash with order.)
- MoToR's TRUCK REPAIR MANUAL (Described at left). If O.K., I will remit \$2 in 7 days, and \$2 monthly for 3 months, plus 35c delivery charges with final payment. Otherwise I will return book postpaid in 7 days. (Foreign price, remit \$10 cash with order.)

Print Name Age

Print Address

City State

Check box and save 35c delivery charge by enclosing WITH coupon entire payment of \$5.95 for Auto Repair Manual (or \$6 for Truck Repair Manual). Same 7-day return-refund privilege applies.

Are You a "One-Date Dick" or a

KING OF MUSCLE?



YES!—and in just 5 Minutes every other day, YOU, too, can have a new physique, added height, glowing health and vigor, with world-famous Paramount Bar Bells. At any age, you can gain new popularity, and probably boost your own paycheck through the sheer vitality of a powerful new build. Send now for FREE Paramount "Self-Check Chart." Learn sensational new low prices of Paramount Bar Bells, sold at direct-from-factory savings. Get started NOW to be a King of Muscle! ACT TODAY!

GIFT CHART—FREE!

AS LOW AS
\$8.95

Paramount Bar Bells, Dept. 14
2416 E. 23rd St., Los Angeles 11, Calif.

Rush info and "Self-Check Chart," FREE!

Name _____
Address _____
City _____ Zone _____ State _____



AUTO BOOKS ON APPROVAL



CAN YOU FIX IT?

These wonder books tell step by step HOW to make difficult repairs and adjustments, how to keep a car at maximum efficiency, including latest improvements in car design and operation. Engine troubles and how to correct them well covered.

4 BIG, THICK VOLUMES
Over 2700 Pages, 2000 Illustrations, wiring diagrams, etc. Beautiful modernistic, washable cloth binding.

AMERICAN TECHNICAL SOCIETY, Dept. A6320
Drexel Ave. at 58th St., Chicago 37, Ill.

I would like to examine your 4-Volume Set of Auto Books. I will pay the delivery charges only, but if I choose I may return them express collect. If after 10 days' use I prefer to keep them, I will send you \$2 and pay the balance at the rate of only \$3 a month until \$24.80 has been paid. Include consulting service as offered above.

Name _____
Address _____
City _____ State _____
Please attach letter stating age, occupation, employer's name and address, and name and address of at least one business man as reference. Men in service, also please give home address.

Train for one of these Big Fields in the Largest & Best Equipped School of its Kind

HAT CLEANING AND BLOCKING

Learn by doing in modern Fine shops under experts. Training opportunities for good jobs or your own successful business. Have the advantage of going to a big, well established school. COMPLETE HAT CLEANING AND BLOCKING TRAINING IN ONLY 12 WEEKS.

G.I. APPROVED

CHICAGO SCHOOL OF SHOE REBUILDING
124 E. 26th Street Dept. MI-9 Chicago 16, Illinois

Shoe Repairing

Look to the future with confidence. Get into these great fields which are among mankind's oldest and most essential. Trained men needed in practically every locality, the year around. No previous experience or advanced education necessary.

Write for Free Booklet Today

STUDY ENGINEERING AT HOME

With An Educational Institution
Courses in ENGINEERING: Electrical, Civil, Mechanical, Drafting, Architectural, Automotive, Steam, Diesel, Aeronautical, Radio, Structural, Minna, Industrial, Petroleum, Marine, Refrigeration, Air Conditioning, Chemical.
Courses in ARTS AND SCIENCES: Philosophy, Education; Letters; Public Health; Medical Jurisprudence; Psychology; Sociology; Physics; Chemistry; Mathematics; Pol. Science; Theology; Law; Business and Commerce; Accounting; Mathematics; Statistics; Agriculture.
McKinley-Roosevelt Incorporated, 4630-DC, Sheridan Rd., Chicago 40, Illinois

LEARN MEAT CUTTING At Home—In Spare Time

Get into the vital meat industry. Concise, practical Home Training based on 25 years proven instruction methods used at National's famous residential school. Prepares you for bigger pay as Meat Cutter, Supervisor, market manager or more money in your own store. Go as rapidly as your spare time permits. Diploma. Start NOW to turn your spare hours into money. Send for FREE bulletin today. No obligation.

National School of Meat Cutting, Inc. Div. ME-63 Toledo 4, Ohio

LEARN DIESEL AT HOME the famous HEMPHILL WAY

Get big, FREE, Illustrated catalog. Shows opportunities in growing Diesel Industry—Trains, trucks, construction equipment, ships, drilling rigs, logging equipment, etc., all use Diesels. Get the training to enter the field of your choice.

HEMPHILL DIESEL AND AUTOMOTIVE SCHOOLS
Department of West Coast University
1601 S. Western Ave., Dept. MI-99, Los Angeles 6, Calif.

Learn PHOTOGRAPHY at Home

Splendid Hobby or Vocation
Prepare in spare time. Practical basic training. Long-established school. Send for free booklet, "Opportunities in Modern Photography" and particulars. Sent postage prepaid. No obligation.

AMERICAN SCHOOL OF PHOTOGRAPHY
1315 S. Michigan Avenue, Dept. 2056 Chicago 5, Illinois

SURPLUS HIGH SPEED DRILLS MICROMETERS

Chrome plated, precision engineered and carefully tested to give long life. Allow:

0-1" capacity each	\$2.25	All New Brillat Fractional and num. sized. Original value \$15.00. Thirty at \$1.50. Original value \$45.00. Original value \$45.00.
1-2" capacity each	3.50	
2-3" capacity each	5.50	
3-4" capacity each	6.50	

EXPANSION REAMERS

Send check, money order or cash. 25% deposit required on C.O.D. orders. All prices F.O.B. Culver City, Calif.

AIRBORNE SALES CO., INC. CULVER CITY, CALIF.

Specialize in fields of opportunity

EVERY course of study at this school is geared to an expanding industry.

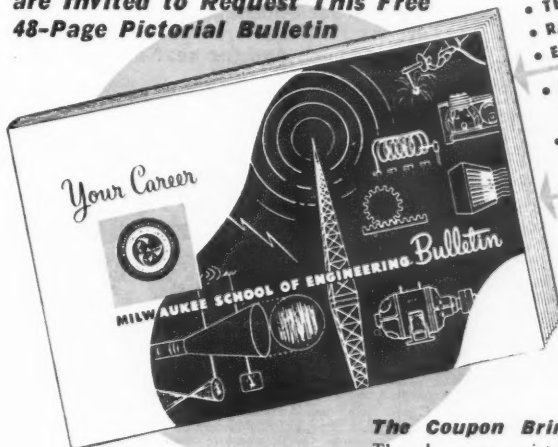
Here the young man can secure practical, specialized training in various technical fields, plus a solid educational background in the basic sciences. The curricula keeps pace with technological developments and the demands of industry.

BUILD YOUR CAREER IN 6 TO 36 MONTHS...

Because of continuous year-round study, a B.S. Degree may be earned in 36 months. The unique concentric curriculum permits the student to pass step-by-step through a

6-month service course and on to technician and professional levels. Each course is complete in itself and serves as a prerequisite for higher level study in the school.

To Help Plan Your Future, You are Invited to Request This Free 48-Page Pictorial Bulletin



- TELEVISION
- RADIO
- ELECTRONICS
- ELECTRICAL POWER
- ELECTRICAL ENGINEERING
- AIR CONDITIONING
- REFRIGERATION
- HEATING
- WELDING
- METAL FABRICATION

The Coupon Brings You This . . .

The above new pictorial bulletin features 103 action photos of student life, fascinating experiments and well-equipped laboratories. Helpful data is featured on career opportunities in the above mentioned fields.



OVER 1500 STUDENTS are currently enrolled in this non-profit institution. Faculty of 85 specialists. Experts chosen from private business serve on advisory committees. The Board of Regents comprises leaders from commerce and industry. Over 35,000 former students.

ACCREDITATION: The National Council of Technical Schools approves the technician's curricula. Technician courses in the Institute of Electrotechnics are accredited by E.C.P.D. Certificates and degrees conferred by authority of the State of Wisconsin Charter.

MILWAUKEE SCHOOL OF ENGINEERING
 Founded 1903 by Oscar Werwath

Terms start
 Oct., Jan.,
 April, July

MILWAUKEE SCHOOL OF ENGINEERING
 Dept. MI-949, N. Broadway & E. State,
 Milwaukee, Wis.

Without obligation send me free bulletin "Your Career" and more details on course in

() Send 110-Page Catalog

NAME..... AGE.....

ADDRESS

CITY..... ZONE..... STATE.....

() Check here if World War II Veteran

PATENTS
AND TRADE MARKS
C. A. SNOW & CO.
REGISTERED PATENT ATTORNEYS
WRITE FOR INFORMATION TO
427 SNOW BUILDING, WASHINGTON 1, D. C.

PATENTS PATENT
LAWYER
TRADE MARKS ASSOCIATE EXAMINER
GUSTAVE MILLER U. S. PATENT OFFICE 1922-1929
99-MI WARNER BLDG. REGISTERED PATENT
WASHINGTON 4, D. C. ATTORNEY
Send for Form
"INVENTOR'S RECORD!"

TRADE MARKS •
COPYRIGHTS •
PATENTS
The Time to Contact
a Patent Attorney is Promptly
After You Have Finished Your Invention
Write for FREE "INVENTOR'S GUIDE" & "Record of Invention"
FRANK LEDERMANN Registered Patent Attorney
154 Nassau St. • Room 2024 • New York 7, N. Y.

HIGHEST
ROYALTIES and CASH
FOR YOUR INVENTIONS
Write for FREE booklet without obligation
UNIVERSAL MARKETING CO.
354 S. Spring St. (Suite L) Los Angeles 33, Calif.

INVENTORS
Whether an invention is patentable can be substantially
determined by a search of the U. S. Patent records. With-
out obligation, write for information explaining the steps
you should take to secure a patent.
JOHN N. RANDOLPH
Registered Patent Attorney
209 Columbian Building Washington 1, D. C.
INVENTORS

Hundreds of manufacturers have requested our
assistance in locating marketable new products.
Complete information, free.

INSTITUTE of AMERICAN INVENTORS
Dept. 5, 1926 Eye St. N.W., Washington 6, D. C.

LOCKSMITHING & Key Making
PRACTICAL UP-TO-DATE COURSE—ONLY \$3.95
Easy-to-learn modern information for self-instruc-
tion. How to work on locks, pick locks, de-code,
make master-keys, repair, install, service, etc.
For every handyman, home owner, carpenter,
mechanic, service station operator, fix-it shop,
hardware dealer, gunsmith. 53 plain illus-
trated lessons. Full price only \$3.95. SEND
with order, we'll ship postpaid. Satisfaction guaranteed or refund.
Address below.
WATCH & CLOCK REPAIRING
Learn at Home in Your Spare Time! — Prepare for a
bappy future, with security—and quality for a
good job NOW. A fascinating and thorough self-in-
struction training in American and Swiss watches
and clocks. Special section on alarm clock repair,
Pant-growing field. Satisfaction is guaranteed. Full
price only \$4.95, postpaid—or COD plus postage.
Nelson-Hall Co., 1139 S. Wabash Ave., Dept. J-3, Chicago 5, Ill.

Your Invention Clinic

[Continued from page 20]

Let's assume that your calculations reveal that you can expect to sell a million of the articles per year. You have modestly divided this by 100, giving 10,000 as the figure. At \$5, if you get five per cent, you can expect \$2500 per year.

Although your patent will run for 17 years it will be safer to expect its useful life to be about eight, so the invention should be worth \$20,000. This would be a good price for an outright sale of your patent.

Yet, even up to this point, the invention has no value. Not until you get a bona fide signature to a contract can you say for sure what the value is in terms of good hard cash.

So, remember that an invention is worth next to nothing until you have been able to make money by the sale of the patent, the license to manufacture it, or by the production and subsequent revenue return.

And for next month . . .

Believe it or not, next month we're going to give perpetual motion machines a little nudge.

SPEED & MILEAGE
MANUAL
125 Illustrations
EASILY GET UP TO 40%
MORE SPEED, POWER
AND MILEAGE FROM
ANY AUTOMOBILE!
Famous authentic book shows
simplified soup-up methods—
Speed Tuning—Economy Secrets—
Proven Methods for all cars!
Tells how to build your own **SPEED EQUIPMENT! FAST SPORTS CARS!**
"HOT RODS" 135 MPH CONVERSIONS! Complete instructions on
building inexpensive California Accessories, Super chargers, Hi-
Speed Heads, Dual Manifolds, Twin Mufflers, "Water Injectors!"
All about fast engines, Gas Saving, Restyling, Lowering, "Cam
Secrets," Dual Carburetion, Ratios! **BRAND NEW METHODS**, Formulas,
Plans, "Racing Tricks"—Fuel! Also shows latest "Hollywood CUSTOM
STYLING!" Streamlining! Sport changes! Speed Conversions! PLUS
California Register Plans! Racer Diagrams! Working Drawings! Per-
formance Charts! Graphs! Beautiful Screen Photographs! etc.!
COMPLETE MANUAL plus Hot Rod Handbook \$1.98 Paid
and Equipment Catalogs **ALL THREE** Post
ALMQUIST AUTOMOTIVE ENGINEERING, Milford 4, Penna.

FREE!
up-to-the-
minute 100
page bargain
guide
Helps you s-t-r-e-t-c-h your dollars on
TV, electronics, radio and tools.
Write today for the 1945 Lafayette-
Concord catalog. A penny postcard
will do the trick. You'll find pages
and pages of the finest equipment
at new low prices. Use the catalog
to order everything you need and
save. It's free. Write to Lafayette-
Concord, Dept. T1-9, 100 Sixth
Ave., New York 13, 901 West
Jackson Blvd., Chicago 7.

YOU CAN START YOUR OWN
MAIL ORDER
BUSINESS
THIS MAGAZINE TELLS HOW
ADVANCE Publishing Co.
313 E. 21ST ST. • NEW YORK 10
SEND 25¢
FOR
SAMPLE COPY

there's a TIME LIMIT on veteran training



Training under the G.I. Bill is a *limited offer*. You must enroll within four years after your discharge or before July 25, 1951 - whichever is later. Plan to take full advantage of the benefits to which you are entitled under the law. **START NOW.**

YOU MAY CHOOSE I. C. S. TRAINING

More veterans study with International Correspondence Schools than with any other school. Send *today* for full information on practical, authoritative I. C. S. training!

INTERNATIONAL CORRESPONDENCE SCHOOLS

APPROVED
under the
G. I. BILL

BOX 2318-V, SCRANTON 9, PENNA.

Without cost or obligation, please send me full particulars about the course BEFORE which I have marked X:

- | | | | |
|---|--|---|---|
| <p>Business and Academic Courses</p> <ul style="list-style-type: none"> <input type="checkbox"/> Accounting <input type="checkbox"/> App. Psychology <input type="checkbox"/> Business Administration <input type="checkbox"/> Bus. Correspondence <input type="checkbox"/> Certified Public Accounting <input type="checkbox"/> Commercial <input type="checkbox"/> Commercial Art <input type="checkbox"/> Cost Accounting <input type="checkbox"/> Federal Tax <input type="checkbox"/> First Year College <input type="checkbox"/> Foremanship <input type="checkbox"/> Good English <input type="checkbox"/> Higher Mathematics <input type="checkbox"/> Industrial Supervision <input type="checkbox"/> Motor Traffic <input type="checkbox"/> Retailing <input type="checkbox"/> Salesmanship <input type="checkbox"/> Sign Lettering <input type="checkbox"/> Spanish <input type="checkbox"/> Air Conditioning and Plumbing Courses <input type="checkbox"/> Heating <input type="checkbox"/> Refrigeration | <p>Chemical Courses</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chemical Engineering <input type="checkbox"/> Chemistry, Analytical <input type="checkbox"/> Chemistry, Industrial <input type="checkbox"/> Chemistry, Mfg. Iron & Steel <input type="checkbox"/> Petroleum Refining <input type="checkbox"/> Pulp and Paper Making <input type="checkbox"/> Civil Engineering, Architectural and Mining Courses <input type="checkbox"/> Architecture <input type="checkbox"/> Building Estimating <input type="checkbox"/> Civil Engineering <input type="checkbox"/> Contracting and Building <input type="checkbox"/> Highway Engineering <input type="checkbox"/> Lumber Dealer <input type="checkbox"/> Reading Structural Blueprints <input type="checkbox"/> Sanitary Engineering <input type="checkbox"/> Structural Drafting <input type="checkbox"/> Structural Engineering <input type="checkbox"/> Surveying and Mapping <input type="checkbox"/> Communications Courses <input type="checkbox"/> Electronics <input type="checkbox"/> Prac. FM and Television <input type="checkbox"/> Prac. Telephony <input type="checkbox"/> Radio, General <input type="checkbox"/> Telegraph Engineering | <p>Electrical Courses</p> <ul style="list-style-type: none"> <input type="checkbox"/> Electrical Drafting <input type="checkbox"/> Electrical Engineering <input type="checkbox"/> Electric Light and Power <input type="checkbox"/> Lighting Technician <input type="checkbox"/> Practical Electrician <input type="checkbox"/> Power House Electric <input type="checkbox"/> Ship Electrician <input type="checkbox"/> Internal Combustion Engines Courses <input type="checkbox"/> Auto Technician <input type="checkbox"/> Diesel-Electric <input type="checkbox"/> Diesel Engines <input type="checkbox"/> Aeronautical Courses, Jr. <input type="checkbox"/> Aircraft Drafting <input type="checkbox"/> Forging <input type="checkbox"/> Heat Treatment of Metals <input type="checkbox"/> Industrial Engineering <input type="checkbox"/> Industrial Instrumentation <input type="checkbox"/> Industrial Metallurgy <input type="checkbox"/> Machine Shop <input type="checkbox"/> Machine Shop Inspection <input type="checkbox"/> Mechanical Drafting <input type="checkbox"/> Mechanical Engineering | <p>Mold-Loft Work</p> <ul style="list-style-type: none"> <input type="checkbox"/> Patternmaking—Wood, Metal <input type="checkbox"/> Reading Shop Blueprints <input type="checkbox"/> Sheet-Metal Drafting <input type="checkbox"/> Sheet-Metal Worker <input type="checkbox"/> Ship Drafting <input type="checkbox"/> Ship Fitting <input type="checkbox"/> Tool Designing <input type="checkbox"/> Toolmaking <input type="checkbox"/> Welding Engineering <input type="checkbox"/> Welding—Gas and Electric <input type="checkbox"/> Railroad Courses <input type="checkbox"/> Air Brake <input type="checkbox"/> Diesel Locomotive <input type="checkbox"/> Locomotive Engineer <input type="checkbox"/> Locomotive Fireman <input type="checkbox"/> Locomotive Machinist <input type="checkbox"/> Railroad Section Foreman <input type="checkbox"/> Steam and Diesel Loco. Eng. <input type="checkbox"/> Stationary Engineering Courses <input type="checkbox"/> Boilermaking <input type="checkbox"/> Combust. Engng. <input type="checkbox"/> Marine Engineering <input type="checkbox"/> Power Plant Engr. <input type="checkbox"/> Steam Engine <input type="checkbox"/> Textile Courses <input type="checkbox"/> Cotton Manufacturing <input type="checkbox"/> Loom Fixing <input type="checkbox"/> Rayon Weaving <input type="checkbox"/> Textile Designing <input type="checkbox"/> Woolen Manufacturing |
|---|--|---|---|

Name _____ Age _____ Home Address _____
 City _____ State _____ Working Hours _____ A.M. to _____ P.M.
 Present Position _____ Employed by _____
 Length of Service _____ Enrollment under G. I. Bill approved for World War II Veterans. Special tuition rates to members of the Armed Forces.
 in World War II _____ Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada.

When Answering Advertisements, Please Mention MECHANIX ILLUSTRATED



Photos by Harold Kelly

The Editor's Workbench

That's *MI Crafts and Hobbies* Editor Larry Eisinger grinning at you as he presents our own award—a super-scale Grumman Gulfhawk model plane—to John Janesik of New York City for placing first in the Scale Beauty event at the N. Y. Daily Mirror Flying Fair. More than 250,000 fans watched 1000 contestants win \$10,000 in prizes.

● How Young Is Old?

Long time ago a venerable geezer name of Kung-fu-tse, the Chinese Walter Winchell, is supposed to have said, "One picture allee same worth 10,000 words." If that old saw is true—and who am I to match epigrams with Honorable Mr. Confucius?—then the two pictures on this page ought to be worth at least 15,000 words apiece. Maybe 16. I won't quibble. Anyway, they tell a story all by themselves, and the story is this: *you're never too young or too old.*

The smiling young fellow in the upper left-hand corner is 33 years old and the smiling old-timer in the lower right-hand corner is five and eleven-twelfths years young. They are both named John and they're both nuts about model airplanes. Little John's a little too little to make very good ones yet. But he's trying. And one of these days the results of his trying will be flying, just like the planes his Pop, Big John, makes.

By the time Little John is as old as Big John is now, he'll undoubtedly be building model airplanes (or whatever it is we'll be sky-hopping in come 1976) not only as precise and as beautiful as Pop's prize-winning "Pete"—but maybe even a whole lot prettier. And as for Pop, by then an even 60—what'll he be doing with his spare time? Betcha a buck he'll be building and exhibiting and racing model airplanes right along with John Junior and—who knows?—Johnny Grandson.

In short, model-making is a very widespread, never-fatal, but practically incurable disease which can and does strike you down at any age. At the New York Mirror's Model Flying Fair, where J. Janesik, Sr., won his prize, there were 1000 competitors. The youngest prize-winner was an old gent of 13. The oldest was a young squirt who will never

see 54 again. Out of a total of 17 first-place winners, less than half—seven, to be exact—were 19 or younger. Of the other ten first-prize guys, five were in their 20's, three were in their 30's, and two were in their 40's.

This may come as a surprise to certain silly schlemiels who have an idea that model-making is strictly for the tots. That's the beauty of the hobby—it has something for every age. And the older a model-maker gets, the more fun his hobby gives him, because experience has made him more skilled at it and a little more folding cabbage in the pocket has enabled him to buy himself better tools and equipment. Q. E. D.

How young is old? Don't ask me.

—Bill Parker

And here's John Janesik, Jr., holding the winning Ohlson 23-powered plane his Pop spent 300 hours building.





CARPENTRY



PLUMBING



GARDENING



ELECTRICAL WORK



UPHOLSTERING



MAINTENANCE



FINISHING

At Last! The Editors of **POPULAR MECHANICS** Show You **EVERYTHING YOU NEED TO KNOW TO—**

Add New Beauty and Comfort to Your Home!

Try it **FREE 7 Days** THEN DECIDE IF YOU WISH TO KEEP IT!

This Brand New, 508-Page, Complete Homecraft Encyclopedia Makes It **FUN and EASY** to "Do-It-Yourself" and **SAVE** on Plumbing, Upholstery, Painting, Electrical Work, Masonry, Building Repairs, etc.



BENT-TUBE GARDEN FURNITURE. Easy to make—saves you many dollars.

Now save 60% to 90% on all home repairs, improvements, re-modeling, modernization jobs! "Do-it-yourself-and-save". The editors of *Popular Mechanics* have crammed all the how-to-do-it facts, hints, and directions you need into ONE great new "COMPLETE BOOK OF HOME REPAIRS AND IMPROVEMENTS."



BEAUTIFUL FLOORS

Professional secrets make it easy.

How to Do "1001 Jobs"

Here is how to fix a leaky faucet—build a garden fireplace—install fluorescent lights—lay linoleum—install a hardwood floor—make a cabinet or coffee table—upholster a sofa—hang wallpaper—hundreds of jobs that would otherwise waste cost you a "small fortune."

For just the cost of materials, you can **DOUBLE** the value of your home—and have hours of fun in the bargain!

You need no previous training or skills. Simple, easy-to-follow directions and crystal-clear photos, diagrams, drawings show exactly how to be your own plumber, electrician, mason, carpenter, builder, painter, decorator, upholsterer, cabinet-maker *all-in-one!*



Hand Operated WASHING "MACHINE." Make it from home materials, save cost of expensive machine.

SEND NO MONEY— Use it **FREE** for a Week! Every time you pick up this book and use it, it will mean extra money in your pocket! The publishers invite you to put this to the "acid test" . . . without risking a cent! Examine this NEW book at your local bookseller or, if more convenient, mail coupon now—**WITHOUT MONEY**—if you prefer. When your book arrives actually TRY some of its ideas. If it doesn't pay for itself in the first 7 days alone—send it back and pay nothing. Mail coupon TODAY! GREYSTONE PRESS, 100 SIXTH AVE., NEW YORK 13, N. Y.



MULTIPLE BISCUIT CUTTER Use divider from tray.



UPHOLSTER IT YOURSELF! Book guides you step-by-step.

JUST A PARTIAL LIST of the Things This Book Shows You How-to-Do

- STOP HOME MAINTENANCE IMPROVEMENTS**
 - Stop-Saving Kitchens
 - Laying Hardwood Flooring
 - Finishing Floors
 - How to Install a Door
 - Air Filters for Your Windows
 - "Built-In" and Cabinets
 - Cure Leaky Basements
 - Home-Freezer Unit
- PAINTING, DECORATING, FINISHING**
 - Paint Maple for Walls
 - Hanging Wallpaper
 - Wood Finishing
 - Stain
 - Modern Finishes
- ELECTRICITY AND PLUMBING**
 - How to Fix Appliances
 - Rewire Your Laboratory
 - Fluorescent Lamps
 - Basic Plumbing
- HEATING, INSULATION**
- LAWN and GARDEN**
- WOODWORKING**
- FURNITURE**
 - THE HOME WORKSHOP
- MAINTENANCE**
 - Strip-cut Drawers
 - Pulls
 - Coffee Table
 - Bus-and-Storage
 - Her Chest of Drawers
 - Kneehole Desk
 - Restoring Antique Furniture
 - Welsh Dresser
 - Replacing Cane Webbing
 - Upholster It Yourself
 - Easy-to-Make Stool
 - Pad It With Foam Rubber
- FURNITURE**
 - Power Tool Short Cuts
 - Quick-on Drill Press Clamps
 - Using Cold Chisels
 - Solder It Right
 - Improve Handaw From Sewing Machine to Jig Saw
 - Folding Workbench
- HEATING, INSULATION**
 - Stop Heat Waste
 - Make Storm Sash
 - Save Fuel by Calking
 - Weather-Strip
 - 2-Step-Saving Coal Bins
- LAWN and GARDEN**
 - Home Landscaping with Evergreens
 - New Roof Building
 - Sturdy Fences
 - Glass Cutting
 - How to Make Concrete
 - Garden Fireplace
 - Tuckaway Picnic Furniture
 - Bent-tube Furniture
 - Electric Hedge Trimmer
 - Motorize Your Mower
- WOODWORKING**
 - Work with Inlays
 - Cutting Tapered Legs
 - Novelty Mch. Boxes
 - Carved Desk Set

GREYSTONE PRESS

100 Sixth Ave., New York 13, N. Y.

MI 9

Without obligation, please send me, prepaid, for one week's FREE EXAMINATION, "Popular Mechanics" Complete Book of Home Repair and Improvements"—308 pages, 6 1/2 x 9 1/2 inches, attractively bound in cloth and showing, in words and pictures, how to do my own Carpentry, Plumbing, Gardening, Electrical Work, Upholstering, Painting and Finishing, Handicraft, Insulating, Paperhanging—plus hundreds of ideas for labor-saving devices, handy home improvements, easy-to-build step-savers, and space-savers.

At the end of one week I will either return the book and owe you nothing—OR I will keep it and send \$1 (plus few cents postage charges) as a deposit. Then, one month later, I will send \$1.98 to complete the payment in full.

() **DE LUXE EDITION.** Check here if you prefer the handsome De Luxe edition—attractively bound, stamped in genuine gold, an improvement in addition to any home library. Only \$1 extra.

Name _____ (Please print plainly)

Address _____

Zone No. _____

City _____ (if any) State _____

() **SAVE SHIPPING COSTS!** Check here and enclose full payment (\$2.98 for regular edition, \$3.98 for Deluxe) WITH this coupon. Then WE pay all shipping costs. Same 7-Day Return Privilege, of course.

EARN MORE IN DRAFTING



Steady Employment
More Opportunities For Promotion

"Here I am at work making good money as a draftsman. I'm glad I sent the coupon to Chicago Tech for that Free Trial Lesson and found out how easy it is to learn Drafting in spare time at home. Today I feel secure in my job because the draftsman's work comes first on any new project. And, in addition, draftsmen can't be replaced with machines. What's more, I feel I'm slated for promotion and more pay, because I see so many draftsmen advancing to high-pay jobs."

LEARN IN SPARE TIME—AT HOME!

(or at the College in Chicago)

A few hours of pleasant home study every week—that's all. No interference with your present job. All the tools you need; drawing outfit included. With Chicago Tech's help, you train yourself step by step. This tested method—developed over 45 years of C.T.C. progress—prepares men quickly for good positions in industry.



FREE INFORMATION—SEND COUPON
To prove to you how easy it is to learn Drafting at home by the Chicago Tech method, we will send you this FREE TRIAL LESSON. No charge for this lesson, now or later. Fill out and mail coupon, or send post card today.

CHICAGO TECHNICAL COLLEGE

M-273 Tech Bldg., 2000 So. Michigan Ave., Chicago 16, Illinois
Mail me FREE Lesson with information about big opportunities in DRAFTING.

Name..... Age.....
Address.....
City..... Zone..... State.....

START A BUSINESS AT HOME

Others are doing it. So can you. **ADVANCE** Magazine, "The Voice of Mail Order," tells how to make big money selling by mail to customers all over the country. Start at home, sparetime, with tiny capital.

ADVANCE Publishing Company
313 East 21st St., New York 10, N. Y.

SEND 25c FOR SAMPLE COPY



Command Bigger Money!

STUDY LAW

STUDY AT HOME for Business Success and LARGER PERSONAL EARNINGS. 40 years expert instruction—over 114,000 students enrolled. LL.B. Degree awarded. All text material furnished. Easy payment plan. Send now for FREE BOOK—"Law and Executive Guidance." It explains the course—how you may enroll and the many ways you may profit from Law Study. G. I. Approved. Write TODAY to:

AMERICAN EXTENSION SCHOOL OF LAW
Dept. 18-X, 646 N. Michigan Ave., Chicago 11, Ill.



FREE! SAMPLE

that **GLOWS IN THE DARK!**

AN EASY WAY TO MAKE BIG MONEY

Be the first to sell sensational luminous home numbers, light switch plates, wall protectors, cord pulls, novelties, etc. Also luminous pictures, statues, decals, and a host of religious, nursery and other objects that GLOW IN THE DARK. Sell on sight. Get into this new and growing industry. ENORMOUS DEMAND... NO COMPETITION... BIG PROFITS. Represent a large manufacturer, established over 35 years. Write AT ONCE for liberal MONEY-MAKING offer and free sample to show you how they GLOW IN THE DARK.
Madison Mills, 303 Fourth Ave., Dept. A-6, New York 10, N.Y.


Learn Profitable Profession in 90 days at Home

MEN AND WOMEN, 18 TO 50
Many Swedish Massage graduates make big money. Large full time incomes from doctors, hospitals, sanatoriums, clubs or private practice. Others make good money in spare time. Prepare for future security by training at home and qualifying for Diploma, Anatomy Charts and 32-page Illustrated Book with special offer of \$2.00.

THE COLLEGE OF SWEDISH MASSAGE
Dept. 958L, 41 E. Pearson, Chicago 11, Ill.

CARTOON YOUR WAY TO SUCCESS!

DON'T COPY—LEARN TO ORIGINATE



RAYE BURNS will teach you HOW TO CREATE ORIGINAL CARTOONS at home that you may SELL! Course contains 26 lessons and over 600 illustrations. All for only \$2.85
Send name and address for free details.

RAYE BURNS SCHOOL, Dept. F, Box 3583, Cleveland, Ohio

SEND FOR THIS FREE!

NOW TO BREAK AND TRAIN HORSES

Make money. Know how to break and train horses. Write today for this book FREE, together with special offer of a course in Animal Breeding. If you are interested in Gaiting and Riding the saddle horse, check here () Do it today—now.

BEERY SCHOOL OF HORSEMANSHIP
Dept. 1159-D Pleasant Hill, Ohio

REAL ESTATE BE A BROKER

PAYS BIG! SEND FOR FREE, BIG, ILLUSTRATED CATALOG NOW! No obligation. Graduates report making substantial incomes. Start and run your own business quickly. Men, women of all ages, learn easily. Course covers Sales, Property Management, Appraising, Loans, Mortgages, and related subjects. **STUDY AT HOME** or in our classrooms in big cities. Diploma awarded. G. I. approved. Nationally known.

WEAVER SCHOOL OF REAL ESTATE (Est. 1936)
15 E. Pershing Road Dept. 1M Kansas City, Mo.

FREE BOOK TELLS HOW

Now! CHEAP OIL BURNER FOR HEATING AND COOKING STOVES - FURNACES

HEAT YOUR HOME, COOK YOUR MEALS WITH CHEAP FURNACE OIL

NO MORE SHOVELING COAL OR ASHES. Sensational Fuelizer Starter Vaporizing System turns Cheap No. 1 Furnace Oil, also Range, Heater, Tractor Distillate, Kerosene and like oils into oil heat—one of the quickest, hottest fires known. **LIFETIME GUARANTEE.** \$1.00 Bonus Offer for Testing.

We will let you try it in your own store or furnace for one month. Get yours for introducing. Big profits QUICK. Be first. Send your name today for details and cash in on the tremendous demand for this Amazing Invention.

NORTHWEST MFG. CO. 707-L Mitchell, S. Dak.






WOULDN'T TAKE \$1000 FOR COURSE

"The lessons are so simple that anyone can understand them. I have learned to play by note in a little more than a month. I wouldn't take a thousand dollars for my course."
 *S. E. A., Kansas City, Mo.



PLAYS ON RADIO

"I can't keep from telling you that I have a good position playing from KTHS, Hot Springs, Ark., every morning."
 *J. S., Okla.



PLAYS AT DANCES

"The Piano course I'm taking is the 3rd course with your school. Previously I took Saxophone and Clarinet. Since then I've played a lot of dance jobs."
 *E. A., Lake View, Iowa

THOUSANDS NOW PLAY who never thought they could!

You, too, can play any instrument by
this **EASY A-B-C METHOD**

YOU think it's difficult to learn music? That's what thousands of others have thought! Just like you, they longed to play some instrument. But they denied themselves the pleasure—because they thought it took months and years of tedious study to learn.

And then they made an amazing discovery! They learned about a wonderful way to learn music at home—without a private teacher—without tedious study—and in a surprisingly short time. They wrote to the U. S. School of Music about this remarkable short cut method. A free print and picture sample actually showed them how easy it was to learn.

The result? Over 850,000 people have studied music at home this simple, A-B-C way. They have found the key to good times, popularity and profit.

And that's what you can do right now. Simply mail the coupon. Get the proof that you, too, can learn to play your favorite instrument—quickly, easily, in spare time at home. Just read the fascinating illustrated booklet—examine the print and picture sample. Tear out

the coupon now, before you turn the page. Instruments supplied when needed, cash or credit. U. S. School of Music, 979 Brunswick Bldg., New York 10, N. Y. 51st year. (Established 1893.)

*Actual names on request. Pictures by professional models.

FREE! Print and Picture Sample

U. S. School of Music, 979 Brunswick Bldg., New York 10, N. Y.

I am interested in music study, particularly in the instrument indicated below. Please send me your free booklet, "How to Learn Music at Home" and your Print and Picture Sample. (Do you have instrument?)

Piano Piano Accordion Reed Organ Clarinet
 Guitar Saxophone Tenor Banjo Tom-toms
 Violin Trumpet, Cornet Ukulele Other Instrument

Name _____ (PLEASE PRINT)

Street _____

City _____ State _____

Check here if under 16 years of age.

SAVE 2c—Stick coupon on penny postcard

WORK AT MY RISK!
 I want you to read the
WARNER SUCCESS PLAN

Get into Business
 For Yourself ...
METALIZING BABY SHOES
 AT HOME IN SPARE TIME

I want to send you the WARNER SUCCESS PLAN . . . the very same Plan that many men and married couples credit with freeing them from the limits of a paycheck and from the drudgery of a time clock.

This Plan tells how you can get started in spare time without risking your job or steady pay.

30 MILLION PROSPECTS

There are 30 million pairs of Baby Shoes in the country right now—ready to be Metalized. The WARNER SUCCESS PLAN reveals all the trade secrets of electroplating; shows you how to plate Baby Shoes with a coating of GOLD, SILVER, or BRONZE;

WARNER ELECTRIC CO.

how to turn this amazing opportunity into cash—how to build, step-by-step, to Big Profits and personal independence.

READ THE TRUE FACTS

Don't decide now. Get all the facts first. Then make up your mind. First, I want you to read the Complete Plan—entirely at my risk. After you investigate—after you discuss it with your family—then and only then do you decide whether to use the Plan and make the small investment necessary to start. All facts are FREE. Time is precious. Mail the coupon today—sure, for my NO RISK TRIAL OFFER.

Ray Brandell, Mgr., 1512 Jarvis Ave., DEPT. 69, CHICAGO 26, ILLINOIS



\$5 an HOUR PROFIT!

Yes, even in spare time, it is possible for you to finish enough work to pay \$5 an hour for your time. Mail the coupon today and see for yourself why so many men and women have called the Warner Success Plan a "godsend".

FREE FACTS ABOUT COMPLETE MONEY MAKING PLAN

SEND NO MONEY Just Mail Coupon

Ray Brandell, Mgr., WARNER ELECTRIC CO., 1512 Jarvis Avenue DEPT. 69, CHICAGO 26, ILLINOIS

As long as it doesn't cost me a penny, I'm willing to read the facts, investigate, then give you my decision. Send facts by next mail. Everything you send now is FREE.

Name _____

Address _____

City _____ Zone _____ State _____



**YOU
can
acquire**

**LAW NIGHTS AT HOME!
L. B. DEGREE**

LaSalle's famous Law Library—used as reference in many Law libraries and Law offices—has enabled thousands to master Law surprisingly fast, in spare hours at home, for business and professional advancement.

These 14 remarkable volumes, compiled by leading professors and lawyers, cover the whole basic field of Law in condensed, orderly, simplified manner.

You advance rapidly with this great library, plus special lectures furnished. We guide you step-by-step with personalized Problem Method of instruction . . . you learn by doing—handling legal problems—not by memorizing rules.

Send for two FREE 48-page booklets, "Law Training for Leadership," and "Evidence," answering questions about Law and its value to you, and telling how LaSalle Law graduates are winning rapid advancement in business and public life. Mail coupon below. No obligation.

**LA SALLE EXTENSION UNIVERSITY
A Correspondence Institution**

417 S. Dearborn St., Dept. 9493-L, Chicago 5, Ill.

Send me your two FREE booklets described above, without obligation.

Name.....Age.....
Street.....
City, Zone & State.....

New Advertising Machine

**Prints & Illustrates
1¢ Post Cards**

FREE Learn how thousands of business men, in every line, are boosting sales in spite of conditions—with 1¢ messages—printed and illustrated in a few minutes on gov't post cards—with amazing new patented **CARDMASTER**. Your "today's" ideas, read by your prospects next morning. Not a toy, but a sturdy advertising machine, built to last for years. Low price, sold direct. Guaranteed for five years. Send name today.

SEND NAME We'll send FREE illustrated book of money-making IDEAS for your business and complete, unique advertising plans. RUSH YOUR NAME TODAY.
CARDMASTER COMPANY
1920 SUNNYSIDE, Dept. 209, CHICAGO 40, ILL.

WAR SURPLUS BARGAINS

\$500,000.00 INVENTORY for QUICK LIQUIDATION

Surplus items—hundreds of them for home, shop, factory, farm and outdoor use. New items, used items, reconditioned items—all at tremendous savings—all priced for quick sale.

Page After Page of Values

This big catalog shows page after page of amazing money saving values. Write for your copy today. Send 10c to cover postage, mailing, etc. Write today!

SEND TODAY FOR YOUR COPY

10c

STARK'S Dept. 509 So. STATE STREET MI-9 CHICAGO 5, ILLINOIS

"YOU ARE UNDER ARREST!"

Help Bring Crooks to Justice Through Scientific **CRIME DETECTION!**

We have taught thousands this exciting, profitable, pleasant profession. Let us teach you in your own home. Learn Fingerprinting, Fingerprint Identification, Follen Photography, Secret Service Methods thoroughly, quickly, at small cost. Over 800 of all American Bureaus of Identification employ 1 A. S. students or graduates. We can prepare you for this fascinating work during spare time. Write today, stating age, for "Blue Book of Crime."

INSTITUTE OF APPLIED SCIENCE, 1920 Sunnyside Ave., Dept. 2356, Chicago 40, Ill.

SHOE REPAIR OFFERS BIG INCOME

LEARN IN 12 WEEKS TIME

You can own your own shop or earn big income as skilled shoe repairman. Growing demand everywhere at top wages for men who know how. We teach you quickly by actually working on shoes and modern machines. School open to all from 18 to 60 years of age. Free Big 20 Page Book explains everything. Send for your copy today. Los Angeles & Chicago Schools only approved for Vets.

MODERN SHOE REBUILDING SCHOOL, Dept. MI
Established 1927
2937 Belmont Ave., Chicago 361-12th St., Oakland, Calif.
806 S. Figueroa St., Los Angeles 14, Calif.

Chicago TECH College

ENGINEERING BUILDING, DRAFTING, ETC.

Degree in 27 mos. Approved for G. I. Training. Prepare in Chicago, the Industrial Hub. Earn part living expenses. 43th year. Other shorter courses in Air Conditioning, Refrigeration, Radio, Electricity. Enter Jan., March, July, Sept.

Write for catalog
M-93 TECH BLDG., 2000 SO. MICHIGAN AVE., CHICAGO 16

Learn PHOTOGRAPHY

Earn more money through a career in photography than you have ever made before! N. Y. I.'s simple-to-understand Home Study Course is your spare time **SHORT CUT TO SUCCESS**. Resident training at our famous N. Y. School is available **FREE** under the G. I. Bill. Write today!

NEW YORK INSTITUTE OF PHOTOGRAPHY
Dept. "152," 10 West 33 Street, New York 1, N. Y.

TINY RADIO—REALLY WORKS!

FITS IN YOUR HAND! Works on new "PERMA-CRYSTAL" so it NEVER NEEDS TROUBLE-SOME TUBES, BATTERIES OR ELECTRIC "PLUG-INS"! Easy to use—Plays for nothing—should last for years. Beautiful Red Plastic Case.

GUARANTEED TO WORK on local programs by following instructions. G. H. of Ala., says "TINY RADIO IS JUST WONDERFUL!"

Send Only \$1.00 (bill, ck, mo) and pay postman \$2.99 COD plus postage or send \$3.99 for postpaid delivery. **SENT COMPLETE, READY TO PLAY**—simply push on. Has personal phone. **WONDERFUL GIFTS FOR BOYS & GIRLS.** Low priced. Order Your Tiny Radio Now!

MIDWAY CO. Dept. TN1-9 Kearney, Nebr.

Command Bigger Money!

STUDY LAW

STUDY AT HOME for Business Success and LARGER PERSONAL EARNINGS. 40 years expert instruction—over 114,000 students enrolled. LL.B. Degree awarded. All text material furnished. Easy payment plan. Send now for FREE BOOK—"Law and Executive Guidance." It explains the course—how you may enroll and the many ways you may profit from Law Study. G. I. Approved. Write TODAY to:

AMERICAN EXTENSION SCHOOL OF LAW
Dept. 18-X, 646 N. Michigan Ave., Chicago 11, Ill.

NOW YOU TOO CAN BUILD 15 RADIOS *Complete \$14.75*

Absolutely No Knowledge of Radio Necessary
You Need NO Additional Parts

The **PROGRESSIVE RADIO KIT** is THE ONLY COMPLETE KIT. Contains everything you need. Instruction Book, Metal Chassis, Tubes, Condensers, Resistors and all Radio parts.

The 36-Page Book written by Expert Radio Instructors teaches you to build radios in a Professional Manner. You start with a 1-tube receiver. Before you are done with this kit, you will have built 11 Receivers, 1 Public Address System and 3 Transmitters.

SPECIAL FREE OFFER!
Electrical and Radio Testers sent absolutely FREE with each Progressive Radio Kit. PLUS FREE membership in Progressive Radio Club. Entitles you to free expert advice and consultation service with licensed radio technicians.

Write for further information, or ORDER your KIT **\$14.75**
NOW! ONLY — Postage prepaid with check or money order (Postage not prepaid with C.O.D. orders)

PROGRESSIVE ELECTRONICS CO., Dept. MI-17
479 Union Avenue Brooklyn 11, N. Y.



MONEY for MEN ALL DATA FREE

THE PLASTEX Industry needs manufacturers on small scale and for big production of Lamp and Clock, Stands, Art Goods and Novelties in Plstex and Marble imitation. Experience unnecessary. Ipc material makes regular 1c store sellers. Rubber molds furnished for speed production. Small investment brings good returns. Big chain store orders now being placed. Ambitious men have chance for real prosperity. Our free booklet will interest and benefit you.

PLASTEX INDUSTRIES, DEPT. 3
3400 THIRD AVE., NEW YORK 56, N. Y.



One Swipe of NEW PLASTIC Makes these LEATHER and LEATHERETTE Items LIKE NEW

Get Into A Money Making Business

Make like new, worn, scuffed or faded leather and artificial leather equipment. Either your own to renew, recolor and beautify, or cafe, restaurant and hotel equipment as a business. Single stroke with a brush renews. Does not crack, peel or scuff. Resists acid, alcohol, caustics and weather. All colors. Mail coupon for free sample.

FREE Sample SHOWS EFFECT

\$50 to \$500 Profit On One Job Possible

Let me show you how, as I have shown others. Get your own exclusive territory while available. Mail coupon today, I'll do the rest. — Jack Edwards, Sales Mgr.

LEATHER-NEW PRODUCTS.
6082 Sunstope, Kansas City, Mo.

Send me without obligation a sample of Leather-New coated material so I can inspect it.

Name _____
Address _____
City _____ State _____

MEN-IF YOU VALUE Your Future—read this FREE BOOK

SEND FOR IT Today!



TELLS YOU HOW TO WIN BIGGER PAY AND REAL SECURITY

This book is yours without a penny of cost. "Your Future in Refrigeration and Air Conditioning" tells you what's in store for you in this fast moving, big pay field. No obligation. We want you to have this big, fascinating book. We want you to have the opportunity to read it—and to decide for yourself whether this is the field for you. You'll see pages of interesting pictures showing men on-the-job in Refrigeration and Air Conditioning. You'll read all about the fine opportunities in this amazing industry. This can easily be the most important book you'll ever receive and read—because it concerns your own future! Refrigeration and Air Conditioning has plenty of room for trained men—to handle good paying jobs in the many branches of this great industry. Almost unlimited future for men who know this work. Now you may learn Refrigeration and Air Conditioning at home in spare time. No need to give up present job or income while preparing to step into a better job. Act now! Simply write your name and address on the coupon below and mail today. Get your free copy at once.

INDUSTRIAL TRAINING INSTITUTE
2150 Lawrence Avenue, Dept. A-3, Chicago 25, Illinois

MAIL COUPON NOW... NO COST NO OBLIGATION

Mr. C. H. Smith, President,
Industrial Training Institute, Dept. A-3
2150 Lawrence Avenue, Chicago 25, Illinois

Please send me a FREE COPY of "Your Opportunity in Refrigeration and Air Conditioning" by return mail.

Name _____
Address _____
City and Zone _____ State _____

When Answering Advertisements, Please Mention MECHANIX ILLUSTRATED

PLASTICAST

THE GREATEST THING IN PLASTICS!

A NEW HOME INDUSTRY AND HOBBY!

We have combined two of our most popular Kits into one **GIANT COMBINATION PLASTICAST OUTFIT** as described:

PLASTICAST . . . a transparent liquid plastic; can be poured into ANY kind of mold or container. Hardens in a few minutes into a beautiful transparent solid, clear-as-glass, tough-as-steel plastic! No tools, equipment or skill required. Our casting plastic is so easy to use as pouring water out of a glass! Ideal for imbedding pretty flowers, butterflies, photos, souvenirs, biological specimens, etc. Makes a **PERMANENT and ATTRACTIVE display!** Make beautiful jewelry, novelties, etc. Casts easily into any shape or form.

MERCULOX . . . liquid plastic, works same as above but hardens in 5 minutes into a very attractive white opaque solid. A general all-purpose plastic. Can easily be made to imitate ivory, Onyx or Marble. May be dyed any color, cast into ANY shape, used for ANY purpose. Extremely hard and durable. Ideal for statuary, figurines, novelties, gadgets, models, tools . . . a million useful things! In addition, **COMBINATION OUTFIT** contains 3 attractive molds for making about \$100.00 worth of novelties, dice, picture, hardeners, measure, imbedding material, jewelry accessories and instruction manual.

COMBINATION PLASTICS OUTFIT, Cat. No. 636, postpaid . . . **\$4.95**
PLASTICAST OUTFIT ONLY, complete with 3 molds . . . **\$3.50**
MERCULOX OUTFIT ONLY, complete with 3 molds . . . **\$3.50**

FREE!

Let us show you how extremely easy it is to make beautiful and useful things out of **LIQUID PLASTICS, LIQUID MARBLE, LIQUID IVORY, LIQUID GLASS, CERAMICS, ETC.** . . . as easy as pouring water out of a glass! Make novelties, jewelry, gifts, artware, gadgets, toys, ceramics . . . a million useful things! We supply everything—**MATERIALS, INSTRUCTIONS AND BUYERS!** Send only 25¢ for 1. Big catalog of 100 casting materials, molds, and accessories. 2. A beautiful **CAMEO** free (to show you what you can do), and 3. Actual **INSTRUCTIONS** on how to cast and start in the **CASTING BUSINESS!** Send 25¢ today—this may be the lucky coin that will start the most fascinating and profitable phase of your life! (Catalog only—10¢)

TERMS: We pay the postage (U.S.A. only) if full cash accompanies order. C.O.D. accepted (U.S.A. only) if \$1.00 deposit included for each item ordered.

DEALERS: WRITE FOR CATALOG, DISCOUNTS & PROMOTIONAL MATERIAL.

PLASTICAST COMPANY (DEPT. H)

4637 N. Kedzie Ave. P. O. Box 987
 Chicago 25, Ill. nearest address) Palo Alto, Calif.

CANADIAN CUSTOMERS, please order directly from: CANADIAN INDUSTRIAL PLASTICS, LTD., 1056 1/2 Pender West, Vancouver, B. C.

SPORTEE

Mufflers—All Ford, Chev., Ply. . . \$4.45
 All Buick, Pont., Olds, Chry.,
 Dodge, Hudson, K.F., Pack., etc. . . \$5.45
 V-8 and Merc. Duals
 (32-49 incl.)
\$15.95




DEALERS WANTED

Beautiful SANDEE Fender Skirts **\$16.95**

A SANDEE Sportone will outlast two ordinary mufflers and give More Power! More Speed! More Mileage!—plus a tone quality unsurpassed.

Please ship (item): _____ Price _____
 Car and Year _____ Name _____
 Address _____

SANDEE MUFFLER CO. 5643 Corynne Pl. Culver City, Calif.




ELECTRIC APPLIANCES REPAIRED YOUR NAME

Start YOUR OWN BUSINESS!

Repair electrical appliances of friends and neighbors. Service electrical equipment in factories, stores, etc. Work full or part time! New Shop Method home-training system. Rush name today for **FREE BOOK** and special form for getting Electronic Kit, Special Service Kits, Armature Growler, illustrated Instructions on new easy-payment plan. Pay us later with your **EARNINGS WHILE LEARNING.** Rush name.

CHRISTY TRADES SCHOOL
 2835 N. Central Ave., Dept. D-7106, Chicago 34



LEARN MEAT CUTTING

through actual practice. Profitable Meat Cutting and Self Service Meats taught easily, quickly. **LEARN BY DOING** at Toledo in just eight short weeks under actual market conditions. For beginners or men with experience. All subjects taught thoroughly and completely. Diploma, Job help. Get store of own. People must eat. School in operation over 25 years. Approved for GI training. Send today for **FREE** illustrated catalog. No obligation. **NATIONAL SCHOOL OF MEAT CUTTING, Dept. 52-L, Toledo 4, O.**



RAISE HAMSTERS

The new wonder animals from Syria. Often called Toy Bears. Delightful pets . . . Everyone wants them . . . Laboratories need thousands. Clean, odorless. Raise anywhere. Profitable and interesting. Write today for big, free, picture book.

GULF HAMSTERY, 1553 BASIL ST., MOBILE, ALA.

WATCHMAKING

Be a Watchmaker—Be Independent

Get practical training at the only school in Chicago accredited by the Horological Institute of America and U.H.A.A. Day and Evening Classes—Approved for Veterans

CHICAGO INSTITUTE OF WATCHMAKING
 7 So. Pulaski Road Dept. MI-9 Chicago, Illinois

Write today for free information

BE A NOTARY PUBLIC

Get paid for life for signing your name. Old legal-supply house. 22 cities; helps you get appointment by governor if you qualify. No training needed, no course to study. As a public notary your signature is important; you certify legal papers by signing, get paid. Money intake grows as you become known. Like compound interest. Income steady, for life. We equip you completely. Pay us after you are appointed—2 payments \$12.50 each. That's all. Details free.

STATIONERS EXCHANGE BOERNE 53, TEXAS

EARN \$10000 A YEAR

Excellent opportunities for over 100 occupations including clerks, mechanics, engineers, electricians, apprentices, laborers, etc.

\$2700 To Start—Quarters and Subsistence Furnished

TRAVEL, ADVENTURE, FUN, PROFIT, EDUCATION, CAREERS IN THE AMERICAN MERCHANT MARINE—absolutely NON-MILITARY.

Write for your **FREE BOOKLET: INTERNATIONAL MARITIME INSTITUTE, 79 Wall St., New York 5, N. Y.**

MORE PAY through HOME STUDY TRAINING in SPARE TIME

Do you want a better position—a larger salary? They are within your reach—now. LaSalle experts will guide you step by step in gaining business training which leads to greater earnings.

The time-saving, interesting LaSalle Problem Method helps you prepare at home, without interference with your present duties.

Simply mark on the coupon the field in which you desire success, and we will mail you a valuable book describing the opportunities in that field—plus "Ten Years' Promotion in One"—a book which has helped many men. Let us tell you how we have started thousands of average men and women on the high road to success and more money. Check and mail the coupon now.

LASALLE EXTENSION UNIVERSITY

A Correspondence Institution

417 S. Dearborn St., Dept. 9493-R, Chicago 5, Ill.

Send me full information regarding the course I have marked—without obligation—plus "Ten Years' Promotion in One."

- | | |
|--|---|
| <input type="checkbox"/> Higher Accountancy | <input type="checkbox"/> Salesmanship |
| <input type="checkbox"/> C.P.A. Coaching | <input type="checkbox"/> Traffic Management |
| <input type="checkbox"/> Bookkeeping | <input type="checkbox"/> Foremanship |
| <input type="checkbox"/> Law: LL.B. Degree | <input type="checkbox"/> Industrial Management |
| <input type="checkbox"/> Business Management | <input type="checkbox"/> Stenotypy
(Machine Shorthand) |

Name.....Age.....

Address.....

City.....Zone.....State.....

BUILD YOUR OWN TELEVISION SET

Only \$59.50
Basic 7" Kit



It's Easy! You don't have to know radio to build this fine Telekit. All you need is a soldering iron, pliers and screw driver. Photos and diagrams in new 54 page illustrated instruction book show you each step of the way.

Over 30,000 Telekits have been assembled. Pictures are bright and clear. Superior to sets costing much more.

Own a television business of your own. Sell power kits to neighbors and friends. Make over \$100 a week in your spare time. Write for confidential prices for dealers and Telekit builders on kits, tubes, and cabinets.

GUARANTEED. Unusual factory service plan **GUARANTEES GOOD PERFORMANCE.** Write for **FREE** booklet with complete details.

ELECTRO-TECHNICAL INDUSTRIES

1432 N. BROAD ST. DEPT. A PHILA. 32, PA.

SHINE WITHOUT 'POLISH'

New Invention! • Sells Like Wild



Replaces messy pastes, liquids. Simply glide over shoes—and presto! —you have a lustrous, long-lasting shine. No mess. No muss. No soiled hands. Clean. Handy. **WORKS LIKE MAGIC!** For Men's, Women's and Children's Shoes. Low priced. Lightning seller!

SAMPLES FOR AGENTS Sample offer sent immediately to all who send name at once. A penny postal will do. **SEND NO MONEY—just your name.** KRISTEE CO., 775 Bar Street, AKRON, OHIO

STUDY AT HOME

WITH AN EDUCATIONAL INSTITUTION

Courses in **ENGINEERING:** Electrical; Civil; Mechanical; Drafting; Architecture; Automobile; Steam; Diesel; Aeronautical; Radio; Structural; Mining; Industrial; Petroleum; Marine; Refrigeration; Air Conditioning; Chemical.

Courses in **ARTS AND SCIENCES:** Philosophy; Education; Letters; Psychology; Public Health; Medical Jurisprudence; Sociology; Physics; Chemistry; Geology; Pol. Science; Theology; Law; Business and Commerce; Accounting; Mathematics; Statistics; Agriculture.

McKinley-Roosevelt Incorporated, 4610-CC, Sheridan Rd., Chicago 40, Illinois

Be a DETECTIVE



Learn at Home In Spare Time

Earn good money in respected profession. A School with modern ideas. Hundreds profited by our Easy to Learn methods. Course by former U. S. Govt. Agent. Expose of criminal methods. Basic training in detection; prevention methods. **FREE** BOOK describing training and opportunities.

INTERNATIONAL DETECTIVE TRAINING SCHOOL
1701 Monroe St., N. E. Dept. 259 Washington, D. C.

LOTS \$300 LOW TERMS

In California's loveliest Garden Spot, on scenic shores of beautiful Morro Bay. Enjoy future independence with excellent soil, soft water, wonderful fishing, hunting, boating, bathing, etc. Grow fruits, vegetables, poultry. Perfect temperate climate. Congenial community. Finest investment. Free literature.

RICHARD S. OTTO

Dept. T San Luis Obispo, California

SUIT YOURS AS A BONUS



AND BIG MONEY IN SPARE TIME, TOO

We want you to wear this fine made-to-measure suit. Make it yours by sending a few orders, and earn **BIG CASH PROFITS** in spare time. Your suit will help you get more orders with over 100 rich, quality fabrics, tailored-to-measure to newest styles. Also Ladies' Tailored Suits—complete line. Write today for **FREE SAMPLES**. No experience, no money needed. For quick action tell us about yourself.

J. C. FIELD & SON, Inc.
Harrison and Throop Sts., Dept. W-1802, Chicago 7, Ill.



AMAZING NEW HOLLYWOOD PLAN

• Yes, **YOU** can draw **GIRLS, CARS, FRIENDS,** even **MAGAZINE COVERS.** Our plan is **EASY** —especially designed to help the beginner and advanced student. Many artists make more than \$150.00 per week in advertising and cartoons. Be your own boss, draw for money anywhere. Our Commercial Artists will teach you the secrets from **HOLLYWOOD.** Drawing materials furnished. Be a success. Write **NOW** for details and **FREE** 32-page book.

APPROVED FOR G. I. TRAINING HOLLYWOOD SCHOOL OF ART

Under direction of Frank Aselton
6533 Hollywood Blvd. Hollywood 28, Calif.

Dept. 19 Name.....Age.....G.I.
Address.....
City.....Zone.....State.....

PRINT YOUR OWN POST CARDS

COMPLETE
OUTFIT
only
\$7.50

Amazing results in sales, inquiries and contacts... saves time and money... very easy to use. **GEM STENCIL DUPLICATOR** is ideal for Advertising, Announcements, Notices, Labels, Forms, Price Lists—hundreds of uses for every type of business and organization. Comes complete with all supplies, instructions and 60-page Book of Ideas.

FREE TRIAL OFFER: Try it before you buy it! Write and **GEM OUTFIT** will be sent you postpaid. After 10 days, send only **\$7.50** or return the GEM, no questions asked. The GEM must sell itself; you should be the judge.

BOND EQUIPMENT CO. • Dept. 119
6633 ENRIGHT ST. LOUIS 5, MO.

SEND NO MONEY • FREE TRIAL OFFER

BARBELLS



95 POUND SET

Only **\$10.80**

Extra Plates 10c lb.

We have been selling the finest barbell equipment since 1928. We operate our own foundry and sell direct to you at a very low profit. No other company can match our low prices.

Send for our

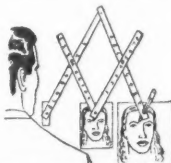
FREE

Barbell

Catalog.

BUR BARBELL CO.
LYNDHURST 33
NEW JERSEY

COPY ANY PICTURE with the AMAZING PANTOGRAPH



The ideal method of reproducing maps, pictures, diagrams, etc. Just place original design under the tracer point and simply trace it. Makes faithful accurate copies from 25% to 425% larger than original. Comes ready for use with extra pencil.

Sent Postpaid, anywhere in U.S. for only \$1.00. Order today. No C.O.D.'s accepted.

DAVID W. WOLF

P.O. Box 113-M, Lefferts Sta., Brooklyn 25, N. Y.

DRAW for MONEY... Be an ARTIST!



Trained Artists are Capable of Earning \$65, \$80 and MORE a WEEK!

YOU CAN learn to draw at home in your spare time the well-known WSA way. **COMMERCIAL ART, DESIGNING, CARTOONING** all in **ONE** complete course. No previous Art experience necessary—we teach you step-by-step. Prepare for a fascinating hobby or profitable career. Good art jobs await artists in advertising, television, publishing, etc. For 35 years WSA graduates have been making good—**WHY NOT YOU?** Low cost—only \$5 monthly.



VETERANS! WSA Approved for Training Under G. I. Bill. Write for **FREE BOOK**, "Art for Pleasure and Profit," fully describes course, our method of instruction and commercial opportunities for you. **TWO ART OUTFITS** included with training.

MAIL COUPON TODAY FOR DETAILS.

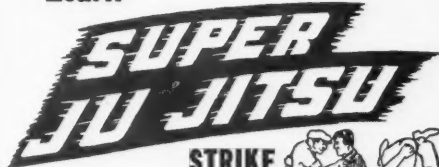
WASHINGTON SCHOOL OF ART, Studio 209R
1115—15th St., N.W., Washington 5, D. C.

Please send me full information and your Free Book, "Art for Pleasure and Profit."

Name..... Age.....
Street.....
City..... Zone..... State.....
 I am entitled to training under "G.I." Bill

Get Tough DOUBLE-QUICK!

Learn



**STRIKE
LIKE LIGHTNING!**



TECHNIQUE is the deadly secret. If you've got just an average build you should learn these improved judo defenses against guns, knives, clubs... while you use only your bare hands.

Use Super Ju Jitsu and you'll have a weapon so powerful—**SO DEVASTATING**—that neither superior size nor superior strength will matter so much. This course reveals secret methods to scientifically disarm, disable, and capture a gunman!

Works like magic... leaves shattering results. Ruthlessly efficient fighting method to be used in an emergency, when fair fighting is out. Protect yourself and your loved ones from attack.

76 AMAZING LESSONS

Here's Just a Small Idea

19 knock-out spots on the human body • How to defend against two or more assailants at once • Quickest sure-fire knockout blow • The super flying dive attack • How to stand attacker on his head • How to throw a man 9 or 10 feet • Favorite Ju Jitsu Tricks • Quickest way to make your attacker absolutely powerless • How to develop your arms and strengthen your hands • plus 67 more terrific lessons! Complete course only \$4.95. Order today.

NELSON-HALL CO., Dept. 3-J-3, 1139 S. Wabash Ave., Chicago 5, Ill.

MAIL THIS TRIAL COUPON TODAY!

NELSON-HALL CO., Dept. 3-J-3
1139 S. Wabash Ave., Chicago 5, Ill.

Please RUSH me the complete Super Ju Jitsu Course at once. I understand I will get 76 fully illustrated self-instruction lessons. If I am not convinced this sensational course is worth many times this low price, I will return it in 10 days and you guarantee to refund every penny, without question or quibble.

I enclose \$4.95 as full payment. Ship entirely postpaid.

Ship C.O.D. for \$4.95, plus postage charges.

Name.....
Address.....
City..... State.....

When Answering Advertisements, Please Mention **MECHANIX ILLUSTRATED**

MODERN HOME LAUNDRY BUILD YOUR OWN



Don't put that shiny new washer in a dingy cellar! Build a bright, cheery laundry with low-cost Gold Bond Gypsum Wallboard. Big, handy panels are easy to nail up—are fire-proof and unaffected by cellar dampness. Paint it white and you'll have a spick and span laundry room to be proud of! See your local Gold Bond Lumber and Building Material Dealer.

Free Book of suggestions ↓

NATIONAL GYPSUM COMPANY,
Dept. D-4, Buffalo 2, New York
Gentlemen: Send free copy of new Book-let, "Modernizing Magic" showing remodeling ideas and methods:

Name.....
Street..... State.....
City.....
(Please print name and address)



**Here's How CREI Prepares You for a
Professional Career with Industry-Recognized
Training in a Minimum of Time**

RADIO-ELECTRONICS TELEVISION ENGINEERING

GRADUATES of CREI residence school are preferred by industry because of their training and ability. This recognition is the reason that CREI men quickly find good jobs. With 22 years of practical teaching experience in these highly technical fields, CREI offers an outstanding faculty, modern and complete laboratories, shops and equipment. New students are accepted twice monthly and each may advance as rapidly as he is capable. The basic course with one specialized course requires an average of 20 months to complete.

CREI is recognized as one of the country's leading technical institutes. Its work is of college level. It prepares the young man for a good job in industry in a minimum of time.



Approved for Veterans' Training

CAPITOL RADIO ENGINEERING INSTITUTE

An Accredited Technical Institute Founded in 1927

Mail coupon for Free Catalog

Capitol Radio Engineering Institute, Dept. 199A
16th & Park Road, N.W., Washington 10, D. C.

Please send me your residence school catalog and complete details.
(If interested in Home Study check below.)

Name..... Age.....

Street.....

City..... Zone..... State.....

I am entitled to training under G.I. Bill Send information on Home Study Courses

Dear Editor—

We want MI readers to use this monthly letters column as they see fit. You can make it a complaint box, question box, suggestion box or even a soap box. But use it! Our only requirement is that you sign your name and keep 'em short, interesting and clean. Address mail to: Letters Editor, MECHANIX ILLUSTRATED 67 West 44th Street, New York 18, N. Y.

Hex Or Poisoners?

I have just finished reading your article on "Can Witchcraft Kill You?" (July MI) and I must say you have very bad judgment in encouraging the belief that it can.

Witchcraft is merely a term for the ignorant to use. The real term should be poisoners!

Hair could easily be used in small, chopped-up bits and impregnated with poisons fed to the victim. Bits of crab claws poisoned with Paris green are also used.

The men who died after Jake Bird had hexed them, propagated the fear in the ignorant to keep them silent and so make it safer for the poisoners to carry on their evil work.

I don't believe in hex but I am a little leery of the poisoners and don't underestimate their powers. So I remain

Anonymous
La Porte, Ind.

We've departed from our policy of shunning anonymous letters in order to bring this message to MI readers. We hope it clarifies the hex situation. And please, watch out for small, chopped-up bits of poison-impregnated hair in your mashed potatoes!

Non-Money-Making Ideas?

Your Money-Making Idea stories always impress me because I'm forever on the lookout for ways to make extra cash.

But all the ideas seem to be successes right off the bat. How about running a story about some good idea which failed? Let the guy who didn't make a go of it give some hints on reasons for his failure and tell how somebody else might be able to make a go of it?

J. Y. Newl
Kansas City, Mo.

If we can ever find somebody who'll admit he messed up a good idea, we promise to run his story.

[Continued on page 38]

Sensational New Electric **① WELDER ② CUTTER!**
FOR 110-115 AC or DC • WELD-BRAZE-CUT-SOLDER-HEAT TREAT **BOTH only \$12**
INSTRUCTIONS INCLUDED • LOWEST PRICE IN HISTORY!

The **WELDRITE** Combination—tested and proved by countless commercial and amateur users, is now offered direct to you at the amazingly low price of only **\$12.00**. No Gas—No Gauges—No Spark Lighter needed. Always ready for immediate use—Just plug **WELDRITE** into 110-115 AC or DC outlet. Uses standard welding and brazing materials. **WELDRITE** furnished complete with Converter Unit, #1 Single Holder for welding metal to 3/16" thickness, using up to 3/32" rod, and #2 Double Holder with Copper Coated Carbon Electrodes for Brazing, Cutting, Heat Treating, etc. Starting welding materials and instructions included. Ideal for home workshop. Invaluable for garages.



SEND NO MONEY! 10 DAY TRIAL. Order your **WELDRITE** Electric **WELDER-BRAZER-CUTTER C.O.D.** today. Pay postman \$12 plus postage charges (wt. 4 lbs.) or send \$12 and we pay postage. Either way, if not satisfied, return **WELDRITE** in 10 days for refund, less postage charges. **WELDER HOOD**—Approved Arc Welding hood only \$3.95. Calif. orders add 2 1/2% tax.

FREE!
Illustrated Folder
CALIFORNIA TECHNICAL PRODUCTS CO.
 448 So. Hill • Los Angeles 13, Dept. C-9

EXPORT PAYS BIG
 World Trade firm offers men and women plan for big pay positions or unlimited-profit businesses of their own in Export-Import. Mail order. World-wide without capital, from home, or travel abroad. Write today for Free Book. State if veteran. Airmail reaches us over night. **The Mellinger Co 1422-H Westwood, Los Angeles 24, Calif.**

ENGINEERING DEGREE IN 27 MONTHS
INDIANA TECHNICAL COLLEGE
 Aeronautical, Chemical, Civil, Electrical, Mechanical, and Radio Engineering (inc. television), Drafting, 1 yr. Gov't approval for G.I.'s. Low rate. Earn board. Large industrial center. Students from 48 states, 18 countries. Demand for graduates. Enter September, December, March, June. Catalog: 109 E. Washington Blvd., Ft. Wayne 2, Ind.

WHY DON'T YOU WRITE?
 Writing short stories, articles on business, hobbies, travel, shop crafts, sports, local and club activities, etc., will enable you to earn extra income. In your own home, on your own time, the New York Copy Desk Method teaches you how to write the way newspaper men learn—to write. Our unique "Writing Aptitude Test" tells whether you possess the fundamental qualities essential to successful writing. You'll enjoy this test. Write for it, without cost or obligation.
 Veterans: This course approved for Veterans' Training.
NEWSPAPER INSTITUTE OF AMERICA
 SUITE 5229-P, ONE PARK AVENUE, NEW YORK 16, N. Y.

WIM SUCCESS-SECURITY-RESPECT as a Master Watchmaker!
APPROVED FOR VETERAN TRAINING
 Learn today's top mechanical profession at the world's largest, best-equipped school of its kind. Individual instruction, day or evening classes. You graduate with complete watchmakers' tools, ready to start your own business or work for established jewelers.
SEND FOR FREE 116-PAGE INFORMATION PACKET
WESTERN PENNSYLVANIA HOROLOGICAL INSTITUTE
 WORLD'S LARGEST WATCHMAKING SCHOOL
DESK 25, 808 RIDGE AVE., PITTSBURGH, PA.

I HELPED T.E.H. MAKE \$14 A DAY WHILE STILL LEARNING!
T. E. H.—West Virginia. "By the time I finished half your course, I was making \$14.00 per day. I have made enough on the side to more than pay for the course."
H. T. ARMSTRONG
Learn ELECTRIC APPLIANCE REPAIR & SERVICE

WE TEACH:
 How to Repair
 Washing Machines
 Vacuum Cleaners
 Electric Ranges
 Lamps, Motors, Irons, etc.,
REFRIGERATION and House Wiring At Home In Your Spare Time!

For a man handy with tools, and happiest when working with his hands, **OPPORTUNITY** is Wide Open Today in this great and growing field. Everyone is a customer for the man trained to service electric appliances.
Open Your Own Shop
 Our practical **HOME COURSE** teaches you this business from A to Z—preparing you to take a well paid job or open your own shop. You can actually start in your basement or garage with the tools we send you... before finishing.

We Include An **ELECTRIC APPLIANCE TESTER**
 A Big Kit of Tools at NO EXTRA COST

MAIL THIS COUPON for FREE BOOK
H. T. ARMSTRONG PACIFIC TRAINING SCHOOLS
 7217 So. Broadway, Dept. M-99, Los Angeles 3, Calif.
 Dear Sirs: Please send me, without obligation, your free booklet and complete details.
 Name _____
 Address _____
 City _____ Zone _____ State _____

Do you want
 ➔ .. to go to College?
 ➔ .. or to enter a Profession?
 (Such as Accounting, Architecture, Nursing, Dentistry, Teaching, Social Work, Osteopathy, Beauty Culture, Optometry, Simulating, Chiropractic, Law, Medicine, etc.)
 ➔ .. or get an Office Position?
 To get anywhere, you practically **MUST** finish High School **FIRST**. You can complete our simplified High School Course in **SPARE** time at home, as **FAST** as your time and abilities permit. Equivalent to resident school work—prepares you for college, pre-professional examinations, business, industry. Standard texts furnished. Diploma. Credit for H.S. subjects already completed. Single subjects if desired. Low tuition, easy terms. American School, Chicago, est. 1897—endorsed by educators. Finish your high school education **NOW**. Write **TODAY!**
High School Course at Home Many finish in 2 Years

American School, Dept. H628 Drexel Ave. at 58th St., Chicago 37, Ill.
 Gentlemen: Send me **FREE** information covering special training in subjects checked below. No obligation on my part.
 High School Course
 Electronics, Industrial
 Architecture and Building
 Automotive Engineering
 Business Management
 Electrical Engineering
 Elec. and Gas Refrigeration
 Air Conditioning
 Railway Training
 Diesel Engineering
 Drafting and Design for Men and Women
 Plastics
 Private Secretary
 Mechanical Engineering
 Aviation
 Radio
 Salesmanship
 Name _____
 Address _____

Learn A Trade NOW! PRACTICAL SHOP TRAINING!

In Our Chicago Shops

- | | |
|---|--|
| <input type="checkbox"/> AUTO MECHANICS | <input type="checkbox"/> WELDING—ARC and GAS |
| <input type="checkbox"/> DIESEL MECHANICS | <input type="checkbox"/> MACHINIST |
| <input type="checkbox"/> REFRIGERATION | <input type="checkbox"/> PIANO TUNING |
| <input type="checkbox"/> BODY-FENDER | |

Above Approved For G.I.'s and Civilians
One of America's Leading Practical Schools
7 Floors of Fully Equipped Shops
Over 48,000 Successful Graduates
Expert Individual Instruction
Learn by Doing—Low Living Expense
Established 1902—Day and Evening Classes

Also the following Home Study Courses

- | | | |
|----------------------------------|--|---------------------------------|
| <input type="checkbox"/> PLASTIC | <input type="checkbox"/> REFRIGERATION | <input type="checkbox"/> DIESEL |
|----------------------------------|--|---------------------------------|

—CALL IN PERSON OR MAIL THIS AD TO—

GREER SHOP TRAINING

(Desk 11) 460 South State St., Chicago 5, Ill.

Please send without obligation free information regarding trade checked above. (Specify whether you are a Veteran or Civilian)

Name..... Age.....
Address.....
City..... State.....

"TOOK IN \$217 FIRST 10 DAYS"

Some Make More,
Some Less . . . We
Help You to Start
Your Own All-
Year Business,
Make Big Money!

With our easily operated, highly efficient wall washer, Chas. Stelle took in \$217 gross in first ten days. E. L. Goss took in more than \$10,000 in one year. E. C. Taber wrote, "I made \$400 gross in two weeks." And no wonder—this machine washes walls 6 times faster and better than by hand.

YOUR MONEY-MAKING OPPORTUNITY

We want more men to go into this profitable business for themselves and enjoy independence. There are customers everywhere—homes, offices, schools, churches, hotels, stores, etc. What you take in is mostly profit, for material costs are low. And there's no need to rent a shop or office. Operate your business from your home. Lose no time. Get all facts without obligation. WRITE FOR FREE INFORMATION. Ask for Wall Washer Details at once.

VON SCHRADER MFG. CO., C692, RACINE, WIS.



Dear Editor

[Continued from page 36]

Shame On Tom McCahill!

Horrors! Nobody, but nobody, has any business "whipping easily over rugged gravel roads at high speed" (MI Tests the '49 Chryslers, July). And with his elbow hung out the window, too!

Tom McCahill would do a service by joining an Association for Car Drivers Who Keep All Their Anatomy Inside The Auto.

F. R. Mills
Daytona Beach, Fla.

We bet Mr. Mills is either a cop or a recruiting agent for the ACDWKATAITA.

"I Love You, But" Dept.

I've written to magazines previously, but I've usually had an ax to grind. However, I'm 19 now and I've been an MI reader since I first learned to read.

Aside from a few of your articles that belong in sensational pulp magazines, I miss few of your stories. I'm not interested in riding on a highway of diamonds (Feb. '49), walking through fire (March '49) or killing anyone mercifully or otherwise (June, '49).

These may be good articles but I don't think they belong in MI. In spite of this criticism, I think MI is well worth my 15c.

Earl A. Bake
Case Institute of Technology

Thanks, Earl, we love you too. But we honestly believe there's also a place in MI for the science-adventure and the science-controversy stories. How do the rest of our readers feel about it?

MI Readers Disagree

Tom McCahill is no doubt an excellent driver but I very much disagree with him on the top speeds of the new cars. Tom stated that the top speed of the '49 DeSoto (July MI) is 87 to 89 mph actual speed. My '47 DeSoto was clocked by an electric timer of the Texas Highway Patrol at 103 mph!

R. E. Bristow
Stafford, Kans.

What would it really be like if those 100 mph cars were actually hammering out a hundred? What we need is an article on the inaccuracies of stock car speedometers.

Bruce Orr
Kirkland, Wash.

[Continued on page 40]

AMAZING NEW NOVELTY

BLONDE

in . . . (out)
of the

BATH TUB!



- Fascinating!
- Tantalizing!
- Intriguing!

Keeps everyone guessing. The lovely Blonde will stay in her bathtub for you—but not for others. She always pops out. Your friends will marvel that you're the only one she obeys. It's a thrilling new novelty that will be the life of the party. Send for yours today—and learn the amazing secret of how to make the lady behave. **SEND NO MONEY.** Rush your order today! Remit with order and we pay postage or C.O.D. plus postage.

NOVELTY MART

59 East 8th Street Dept. 215 New York 3, N. Y.

TRI-STATE COLLEGE

**B. S.
DEGREE IN
27 MONTHS**

66th Year.

Students from all
over the world.

ENGINEERING—Courses in Civil, Elec., Mech., Chem., Aeronautical and Radio. Television. Also Bus. Admin., Acc't. and Sec. Science. Visitors welcome. See beautiful campus, well equipped laboratories. Graduates successful. Enter Sept., Jan., March, June. Write for Catalog. 699 College Avenue, Angola, Indiana.

CRAFTS FOR THE AMATEUR AND THE EXPERT

Hundreds of practical projects in leather, copper, brass, wood, clay, plastics. Decorate fabrics, carve wood, etch glass, make jewelry. Send dime today for your copy of our fully illustrated 48-page catalog for the craftsman.



BEAVER CRAFTS Inc. Dept J-1
11558 S. Wentworth Ave., Chicago 20, Ill.

**MORE SPEED
MORE POWER
MORE MILEAGE**
With
**OCTAGANE
WATER INJECTOR**



Write for Free illustrated information.
MEHER INDUSTRIES
Box 177A LaVerne 2, Calif.

**BURN
WATER
IN YOUR CAR**

Become an Expert ACCOUNTANT

The Profession that Pays

The demand for skilled accountants—men who really know their business—is increasing. National and state legislation is requiring of business much more in the way of Auditing, Cost Accounting, Business Law, Organization, Management, Finance. Men who prove their qualifications in this important field are promoted to responsible executive positions.

Send for This Book—It's Free

Knowledge of bookkeeping unnecessary. We train you from ground up, or according to your individual needs. Low cost; easy terms.

Send for free 48-page book describing the LaSalle accountancy training and the opportunities in this highly profitable field—plus "Ten Years' Promotion in One," a book which has helped many men.

LASALLE EXTENSION UNIVERSITY

A Correspondence Institution

Dept. 9493-HR Chicago 5, Ill.

LASALLE EXTENSION UNIVERSITY A CORRESPONDENCE INSTITUTION

417 S. Dearborn Street
Dept. 9493-HR Chicago 5, Ill.

Please send me "Accountancy, the Profession that Pays"—plus "Ten Years' Promotion in One"—without obligation.

- Higher Accountancy
- C.P.A. Coaching
- Bookkeeping
- Law: LL.B. Degree
- Business Management
- Salesmanship
- Traffic Management
- Foremanship
- Industrial Management (Machine Shorthand)
- Stenotypy



Name Age
Address
City, Zone, State

Start a profitable welding business of your own

**Earn \$350 to \$550
extra profit monthly**

Earn extra money from the
BIG PAY WELDING JOBS

.. easy pay out of profits—terms. **FREE**

New AC Welder lets you do hundreds of jobs easily and quickly. No special training necessary—no secret to getting established in the welding business. Start now. Let Hobart give you helpful hints.

Hobart Brothers Co., Box SM-991, Troy, Ohio
One of the world's largest builders of arc welders

Write for
booklet "How
to Start a
Profitable Welding
Business"



TRAVEL - for 'UNCLE SAM'

ARE YOU JOB-SATISFIED?

GET A U. S. GOVERNMENT JOB

Many Positions to Be Filled

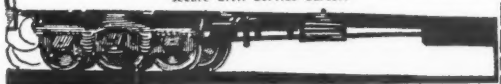
Railway Mail Clerks—Postoffice Clerks—Mail Carriers—Stenographers—Typists, Statistical Clerks—Liquor Inspector, etc. 40 page Civil Service Book—FREE.

MEN — WOMEN

Veterans Get Preference

Mail Coupon immediately—today sure.

Although not government controlled, this can be your first step toward a secure Civil Service Career.



As high as \$3,351.00

FIRST
YEAR

COUPON

FRANKLIN INST., Dept. T78, Rochester 4, N. Y.

Gentlemen: Rush to me without charge. 40 page book with list of U. S. Government big paid positions. Advise me also regarding salaries, hours, work, vacations, etc. Tell me how to qualify for a position.

Name
Address Vet?

It's YOUR future—Make the most of it!



Start now to earn the bigger pay in electrical repair

WAS there ever such an opportunity to get started in electrical maintenance and repair—and at top-notch wages? Are you ready—with experience and ability—to cash in on it? Others are getting just the sort of background needed—quick! practical!—to handle the great variety of electrical maintenance and repair work TODAY—from this well-known electrical library. You can too!

THE LIBRARY OF ELECTRICAL MAINTENANCE AND REPAIR

5 vols., 1826 pages, 1724 illustrations

Gives you the "know-how" to tackle any wiring or motor job. Five books show you HOW—to install all types of motor and generator units—to inspect and repair motor starters and generators—to diagnose motor and generator troubles—to figure new windings for old cores—DC and AC windings—to test armature windings—test induction motors, etc., etc. One book is full of trouble shooting charts that show quickly symptoms, causes, specific remedies, etc.

Take the first step toward improving YOUR future—

No money down—special price—easy payments—FREE TRIAL
 McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18

Send me The Library of Electrical Maintenance and Repair, 5 volumes, for 10 days' examination on approval. If the books prove satisfactory, I will remit \$2.50 in 10 days, and \$3.00 monthly until \$17.50 is paid. Otherwise I will return books postpaid.

Name

Address

City..... Zone..... State.....

Company

Position..... MMX-9-49

Free examination in U.S. and Canada only.
 Canadian prices slightly higher.



I CAN TEACH YOU WATCH REPAIRING AT HOME!

Here is a wonderful opportunity to get into this top-pay, easy-to-learn, uncrowded field thru my unique 10-lesson home study course. Watchmakers in big demand. You train under experts—learn to take a watch apart, repair and put it in perfect running order. Get out of the rut—turn spare time into cash—perhaps a business of your own. More jobs than men to fill them. We have students 18 to 65 who have profited by our training. No interference with present job. We furnish all tools, 15-jewel watch and practice movement. A licensed school.

If more interested in clock repairing or jewelry repair and design, check coupon below and mail at once.

MAIL COUPON TODAY

Mr. E. King, President Dept. MI-9
 Illinois School of Watch Repairing
 2870 Elston Avenue, Chicago 18, Ill.

Send me at once without obligation free literature on

Watch Repairing Clock Repairing
 Jewelry Repair & Design

Name.....

Address.....

City..... Zone..... State.....

40

Dear Editor

[Continued from page 38]

● Bulbs For MI's

I got some of your issues and read them with big pleasure. I tried to get more of them but they are not obtainable in Holland.

I cannot subscribe because we are tied hand and feet by the economic prescription of our magistracy. Therefore I ask you a favor. Could you ask some of your readers to send their old copies to my address.

The only thing I can do for those who send me their magazines is to send them some of our Dutch flower bulbs in a gift parcel.

J. van Heyningen
 Frans Halsstraat 106
 Zaandam, Holland

Sounds like a fair trade to us. How about it MI gardeners?

● Question For Detroit

Why bother to look at auto instruments? They don't tell you anything. The gas gauge says E and F. The ammeter says Charge and Discharge. The heat indicator says Hot and Cold. How much more would it cost to put figures on the instruments?

Robert N. Adams
 Kendallville, Ind.

Here's how to make sure you never miss a copy of MECHANIX ILLUSTRATED, the science, crafts and hobbies magazine that has everything:

* One year: \$1.80

* Two years: \$3.50

* In Canada, U.S. & possessions

Please enter my Subscription to MECHANIX ILLUSTRATED

ADDRESS

ZONE STATE

NAME

CITY

Mail to: MECHANIX ILLUSTRATED, Circulation Dept.,
 Fawcett Building, Greenwich, Conn.

September, 1949

MODERN LAWN MOWER SHARPENER

**FOR LAWN MOWER SHOPS
FIX-IT SHOPS**

PRICE \$241.50

GOLF COURSES • PARKS
101 OTHER JOBS

Sharpens All Reel Type Mowers • Hand, Power or Gang • 12 to 20 Minutes • No Dismantling • No Extra Attachments Needed. All Reel type mowers, from 5-inch edgers to 36-inch power mowers, are quickly sharpened to extreme ends of both left and right twist blades. Handle, wheels, roller and motor remain in place when sharpening is in process. Bed knife sharpened in same brackets. Grinding head rides on five ball bearing races. Easy to operate. Also sharpens chisels, joiner knives, planer blades, Big profit maker. Own your own business. Send Today for FREE Illustrated Bulletin No. 122C



\$263.00 with motor

ORDER NOW
Immediate Delivery

MODERN MFG. CO. 196 N. FAIR OAKS AVE.
PASADENA 1, CALIFORNIA

SMALL INBOARD

PROPELLERS, SHAFTS, STRUTS, RUDDERS
BY THE MAKER OF FAMOUS
COLUMBIAN PROPELLERS

Send for free bulletin #48-D

COLUMBIAN BRONZE CORPORATION
FREEPORT, L. I., N. Y.

Your VOICE!

Results GUARANTEED

Strengthen your voice this tested, scientific way. Yes—you can now build yourself a powerful speaking or singing voice in the privacy of your own room. Self-teaching, no music or piano required. Just send name for sensational details and FREE vocal mechanism chart. State also.

Perfect Voice Institute, Studio J-3, 1141 S. Wabash Ave., Chicago 5, Ill.

HYDROPONICS

24 Page FREE Illustrated Book

Grow out-of-season vegetables, rare flowers or house plants by hydroponics WITHOUT SOIL. Start a fascinating hobby or profitable business in your home. No experience needed for top results. Small space gets BIG RETURNS. Easy, clean, pleasant way to grow any plant indoors or out every day in the year. Fast growth, increased yields, unlimited PROFIT OPPORTUNITIES. Send postcard today for free illustrated book showing how others from every state are succeeding in this wide open field.

CHARLES C. GILBERT & CO., 834 W. IVY STREET, SAN DIEGO 1, CALIF.

NOT RECAPS

VETS-TAKE 10%
YOU USE OUR TOOLS AFTER 1 MONTH
MONETARY REFUND
SLIGHTLY WORN THREADS
HOURS ORIGINAL THREAD
18 MONTHS QUAR.

THE WORLD'S BEST	100% MONEY
600-1-8	1.00
700-1-1	1.00
700-1-2	1.00
700-1-3	1.00
700-1-4	1.00
700-1-5	1.00
700-1-6	1.00
700-1-7	1.00
700-1-8	1.00
700-1-9	1.00
700-1-10	1.00
700-1-11	1.00
700-1-12	1.00
700-1-13	1.00
700-1-14	1.00
700-1-15	1.00
700-1-16	1.00
700-1-17	1.00
700-1-18	1.00
700-1-19	1.00
700-1-20	1.00
700-1-21	1.00
700-1-22	1.00
700-1-23	1.00
700-1-24	1.00
700-1-25	1.00
700-1-26	1.00
700-1-27	1.00
700-1-28	1.00
700-1-29	1.00
700-1-30	1.00
700-1-31	1.00
700-1-32	1.00
700-1-33	1.00
700-1-34	1.00
700-1-35	1.00
700-1-36	1.00
700-1-37	1.00
700-1-38	1.00
700-1-39	1.00
700-1-40	1.00
700-1-41	1.00
700-1-42	1.00
700-1-43	1.00
700-1-44	1.00
700-1-45	1.00
700-1-46	1.00
700-1-47	1.00
700-1-48	1.00
700-1-49	1.00
700-1-50	1.00

Send this ad.

BLATT
BLATT BUILDING
4415 Independence Blvd., Dept. B
Philadelphia, Pa. 19124
Send Chk. or Money Order
Fla. 700-20, N.Y. 700-10, 05

Be A MASTER PLUMBER

Earn \$15 To \$50 A Day
DON'T ENVY THE PLUMBER—BE ONE

Every skilled workman will tell you that Plumbers have the best of it. WINTER and SUMMER the Plumber is busy at top wages. No skilled Plumber is ever out of a job—compare his opportunities with any trade, plus the opportunities of having your own shop.

We teach you Plumbing with TOOLS (not looks) under Licensed Master PLUMBERS in one of the finest equipped schools in America. We make you a Plumber, every branch is taught thoroughly—Lead Work—Blueprint for plan reading—all other tricks.

LEARN IN 32 WEEKS WITHOUT PREVIOUS EXPERIENCE

If you like to work with tools you owe it to yourself to investigate. No need to ever work as an apprentice. Get FREE bulletin. Write now! G. I. APPROVED. Our 24th year.

UNIVERSAL PLUMBING SCHOOL
809 HOLMES STREET KANSAS CITY, MO.

I SHOW YOU HOW TO MAKE MONEY AT ONCE

START YOUR OWN BUSINESS

IN 2 WEEKS—
AT HOME
IN SPARE TIME



METALIZE BABY SHOES

FREE!

IF YOU ACT NOW, I will show you how to start earning extra money immediately—in spare or full time. AND I SHOW YOU HOW to start your own profitable business. With my complete course and easy-to-understand illustrated instructions containing trade secrets of ALL metalizing processes PLUS 2 beautifully processed sample metalized baby shoes AND all my tested and proved methods of operating a successful metalizing business. I show you how to start YOUR OWN profitable, fascinating business right in YOUR OWN HOME. Up to \$5 per hour possible. Absolutely no experience needed. For PROOF send coupon today for FREE details of my MONEY MAKING PLAN for you and be convinced.

MONEY MAKING PLAN
Full Details Without Obligation
MAIL COUPON TODAY!

John Kiktavi, KIKTAVI CO.
Dept. M-9, 2111 W. Manchester, Los Angeles 44
Send me FREE details of your MONEY MAKING PLAN, without obligation.

NAME _____
STREET _____
CITY _____ ZONE _____ STATE _____

Operate YOUR OWN Business

No Shop Needed



Clean and Mothproof Rugs and Upholstery

● See our Column service "ad" in October LIBERTY ●

Can you qualify? . . . If you are dependable, honest and willing to work, send for FREE Booklet explaining how you can become "your own boss" in a growing business of your own. You'll use proven successful methods of established DURACLEAN Dealers. Service rendered "in the home," offices and public buildings. Easy to learn. DURACLEAN cleans by absorption! No scrubbing. No soaking or shrinkage. Fabrics dry in just a few hours. Dirt, grease and many unsightly spots vanish as if by magic . . . colors revive. Upholstery and floor coverings last longer.

DURAPROOF kills moths and carpet beetles. Makes material resistant to both! Another year 'round service. DURAPROOF, to our knowledge, is the only moth proof service backed by a National Money Back, 4 YEAR WARRANTY.

These services are Nationally Advertised! Leading furniture and department stores recommend DURACLEAN Dealer's service. Almost every building in your territory houses a potential customer. Even auto dealers buy your service to revive upholstery in used cars.

Some dealers establish a shop or an office after business has grown. Others continue to operate from their own home. Profits up to \$15 and \$20 for a day's service on EACH of your service men.

Territories are limited! Write immediately for FREE Booklet and Easy Terms.

DURACLEAN CO., 9-179 Duraclean Bldg., Deerfield, Illinois

Fawcett Building, Greenwich, Conn.

When Answering Advertisements, Please Mention MECHANIX ILLUSTRATED



CLASSIFIED SECTION

save money—order by mail

Your advertisement can reach this mail-buying audience of nearly 2 million readers for only 50¢ per word . . . payable in advance . . . minimum 10 words. Copy to be inserted in Nov. issue must be in the office Sept. 2. Mail to MECHANIX ILLUSTRATED, 67 W. 44th St., New York 18, N. Y. Word count: Zone number free. Figure one word: Name of state (New Jersey); name of city (New York); sets of characters as in key (14-D); also abbreviations as 35MM, 8x10, A.D. A.C.

ADVERTISING SERVICE & AGENCIES

ADVERTISE: 24 WORDS, 40 Newspapers \$3.50. Lists Free. Advertising Bureau, 10511-B Springfield, Chicago 43.

SOUTHWEST—24 WORDS in 40 weeklies, \$3.50. M. R. Pennebaker, San Marcos, Texas.

24 WORDS IN 50 Weeklies, \$4.96. J. Darnell, 730 Hays, Jackson, Tenn.

AGENTS WANTED

FREE NYLONS given if Kendex hosiery runs or snags! World's only women's hosiery sold with written guarantee amazing everybody. Mere words could not express unbelievable money making opportunity. Fantastic earnings become reality. Armstrong earned \$202 in 9 days. Watkins sent 92 orders in one day. Imagine replacing hosiery free regardless of cause—whether use or abuse! Truly sales dynamite for terrific profits. Even if you never sold before, three magic words: "Guaranteed Against Everything!" will open doors for you—make women listen and pour money in your pocket. Complete line from sheerest to service (15-20-30-40-60 denier) all lengths 28 to 35 inches—latest colors—seamed full fashioned and seamless. No competition because Kendex guaranteed nylons not sold in stores. Also complete line men's hosiery actually guaranteed for one full year! Nothing like this anywhere. Includes rayon, nylon, lisle, wool, cotton, mixtures, etc. All styles, patterns, colors, prices to please everybody. Thousands shipped daily. 100,000 pairs constantly in stock for fast delivery. Over 30 years in business. You need no money or experience. Nothing to pay now or later. Show free outfits. Write orders. We deliver and collect. Big advance cash plus bonus. Earn money spare or full time—exclusively or side line. No restrictions. Become manager—appoint others to sell for you—earn steady income on their sales. Complete money-making outfits including sales-books in color, samples of hosiery materials, etc., furnished free and prepaid. Simply mail name and address to: Kendex Company, Babylon 427, N. Y.

BE FIRST! Clean up selling brilliant new metal Christmas cards featured in America's greatest box assortment line. Special metal, plastic, foil and novelty assortments. Five portfolios of personal cards. Free samples. Elmcraft Chicago, 5930 South Western, Chicago 36, Ill.

CALL ON friends with sensational Christmas Cards in handy assortments. Sell for \$1.00. Profit up to 50¢. Also popular-priced Personal Christmas Cards. Everyday Assortments, Stationery, Imported Napkins. Samples on approval. Wallace Brown, Dept. C-4, New York 10, N. Y.

BRAND NEW! Amazingly different and smart Christmas Cards bring you big money! Take easy orders for sensational new Christmas Cards. Amazing values. Pays up to 100% cash profit. Big line of Christmas, Everyday Assortments from 60¢, up. Christmas Cards With Name 50 for \$1, up. Imprinted Stationery, Floral Charmettes, Napkins. Get samples on approval, imprints Free. Write North Star, 31 Glenwood, Dept. B-14, Minneapolis, Minn.

EARN EXTRA money easily, sell new Christmas Cards and Gifts-N-Things. 21 folders sell for \$1.00, sent on approval; no investment. Get \$50 or more selling only 100 boxes. Amazing sample offers. Headquarters for new 3-dimensional Christmas cards, plastics, genuine engraved etchings. We send Free samples of easy-to-sell personal Christmas cards and stationery. Pan-n-Brush Studios, Dept. M1-9, 139 Duane St., N. Y. 13, N. Y.

MAKE MONEY Easily. New spare time plan. Up to 100% profit. No experience. Show unusual Christmas, everyday card assortments, Plastics, Gleam and Glo, kiddies cards, wrappings, attractive gift items. Bonus. Special offers. Send today. Samples: 30 different Christmas cards with name, 50¢ and \$1.00 up. Stationery, coasters. Thomas Terry Studios, 101 Union Ave., Westfield, Mass.

AT LAST! Something new and sensational in Christmas Cards. Show Gorgeous Satins, Velours and Plastics never before offered. Gets Easy Orders Fast! Pays Big Profits. Free Samples of Christmas Cards With Name, 50 for \$1. Imprinted Stationery, Floral Charmettes, Napkins. 50 other assortments 60¢ to \$1.25. Samples on approval. Write Puro Co., 2801 Locust, Dept. 964-L, St. Louis, Mo.

BIG PROFITS—taking orders from friends, neighbors. 50 Super Value Christmas Folders \$1.25, with name, America's Leading \$1 Box 21 French Folders, Christmas Holly Box—lined envelopes. Also: Gift Wrappings, Plastics, Religious, Kiddies, Napkins, Stationery, etc. Samples on approval. No investment. Sunshine Art Studios, Dept. M1-9, 115 Fulton St., New York 8, N. Y.

WANT PLEASANT outdoor work in a business of your own? Good profits selling over 200 widely advertised Rawleigh home/farm necessities. Pays better than most occupations. Hundreds in business 5 to 20 years or more! Products—equipment on credit. No experience needed to start—we help you. Write today for full particulars. Rawleigh's, Dept. 1-145-MOM, Freeport, Ill.

UP TO 42% profits selling "Quick Deteriorating Atomic Metal Plates." Instantly cleans silverware, jewelry, metals. Wholesale, retail, sideline. Manufacturers, 509-M19 New York St., Aurora, Ill.

EXTRA MONEY yours—easy! Profits to 100%. Sell thrilling value Plastic Christmas cards, 50 for \$1.00 Personals, Everyday, Religious, Children's, Gift Wrap assortments. Request Deluxe 21-card \$1.00 Christmas assortment, Name Imprinted Christmas cards, Stationery samples on approval. Holiday Card Co., 463 Congress St., Dept. C, Portland, Me.

AMAZING OFFER—\$40 is yours for selling only 50 boxes Christmas cards. Also 50 and 25 for \$1.00 with or without name. Free samples. Other boxes on approval, including entirely new, different deluxe assortment with feature television card. Cute plastic assortments. Write today. It costs nothing to try. Cheerful Card Co., 916 White Plains, N. Y.

EXTRA MONEY Quick! Take easy orders. Low-cost High-profit Christmas cards. Wonderful new type plastic, metallic assortments. Send at once for free 48-page catalog, feature samples on approval and free name imprinted Christmas card sample. Portfolios. Special offers. New England Art Publishers, North Abington 51, Mass.

LOOK! MAKE money all year round selling personal initialed individualized belts, buckles, cap badges, western buckles, tie holders, name plates. 2000 emblems to choose. Big profits, whole or part time. Please write today special outfit offer. Hook-Fast Specialties, Box 1425, Dept. 4, Providence, R. I. Established 1926.

1949 CHRISTMAS CARD Catalog Now Ready! Earn More Money! Be a Wholesale Jobber! A large selection of Box Assortments, Imprint Lines, Religious, Personalized Cards and Christmas Novelties. Three sample boxes, retailing for \$2.60, only \$1.00 postpaid. Catalog Free! Elfko, 440 North Wells, Chicago 10.

EXTRA MONEY! Sell friends Christmas Cards—including fascinating Plastics. 100% profit. Request free samples Exclusive Name-Imprinted Christmas Cards, Stationery unobtainable elsewhere with Christmas and Everyday Assortments on approval. Regal Greetings, Dept. M1-9, Hazel Park, Mich.

BARGAINS—SAVE up to 50%. Hosiery, Lingerie, Toys, Blades, Spices, Specialties. Carded Goods, Dry Goods, Toiletries, Stationery, Jewelry, Notions, Soaps, etc. Send 10¢ for illustrated catalog. Reliable Jobbers, 311 N. Desplaines St., C.P., Chicago 6, Ill.

BUY THOUSANDS of nationally advertised products direct from manufacturers and distributors. Write for "Buy Direct and Save." Service Publishing, 218-C9 Investment Bldg., Pittsburgh 22, Pa. **MAKE \$20** A day selling big value stay-polished solid brass name plates for doors; other easy sellers. Write today. Hubstamp, 359-D Congress, Boston, Mass.

MAKE \$50 SELLING only 100 boxes America's leading 21 card Christmas assortments. Samples on approval. Complete line plastics, wrappings. Free samples \$50 for \$1.00. Name Imprinted Christmas cards. Write Lorain Art Studios, Dept. 88, Vermilion, Ohio.

INCREASE YOUR income. Sell for manufacturer, Nylon uniforms to waitresses, beauticians, doctors, dentists, nurses. Sales outfit and extra catalogs with your name and address furnished free. Terrific cash commissions. Medikote, Rockville Center 1, N. Y.

EXCELLENT SIDELINE for printing and advertising salesmen. Decalcomania name plates in small quantities. Great demand. Also, make money with our line of Automobile Initials and Sign Letters. Free Samples. "Ralco." XL-Roxbury, Boston 19, Mass.

RABBIT FUR coats look like mink or sable. Federal tax free. Sell on sight for \$79.00. Sizes 10 to 20. Agents' price \$50.00 cash with order. If not satisfied after 3 days, return money refunded. Putnam Furs, 1400 2nd Ave., Seattle, Wash.

NYLON, POPLIN, Rayon Uniforms, white and colors. Immediate Delivery. Immediate Profits. Sell to Doctors, Dentists, Nurses, Waitresses, Beauticians, Housewives. Free Sales Kit. Superior Fabrics, Dept. 1-9, 3936 Market St., Phila. 4, Pa.

FREE SAMPLES. Big profits showing amazing Glow-In-The-Dark specialties. House numbers, pictures, plastic novelties, religious and nursery objects, etc. Large manufacturer. Madison Plastics, 303 Fourth Ave., New York 10, N. Y.

PHOTO-SALESMEN—Agents. Sell beautiful hand-colored plastic enlargements. Collect deposit, we deliver. Profitable sideline. Send card for free sample kit. Novel Portrait Co., 3343-B North Ave., Chicago, Ill.

BE RENEWAL headquarters for all magazines. Handle everything at home. Big profits. No experience. No capital needed. Free Catalog tells how. Write McGregor Magazine Agency, Dept. 119, Mount Morris, Ill.

BIG BARGAINS for big profits. Over 100 sensational values. Men's used suits \$2, pants 35c, topcoats \$1.25, overcoats \$2, shoes 20c. Experience unnecessary. Free wholesale catalog. Superior, 1250-C, Jefferson, Chicago 7.

ABSOLUTELY FREE! Big package actual sample fabrics and style presentation of dresses, lingerie, hosiery, etc. Take orders. Commissions big. Send no money. Melville Co., Dept. 5109, Cincinnati 3, Ohio.

MONEY QUICK. Take easy orders sensational men's cushion shoe line. Build steady, repeat business your neighborhood. Free outfit. Concordian Shoes, 24-A West Concord, Mass.

LUMINOUS PAINT (Glow in Dark) Colors—Blue, Green, Yellow, Violet. Jar \$1.00. Complete Kit \$3.50. Folders Free. Gemlite Products, 12691 Charest, Detroit M-12, Mich.

"FORTIFY THE FUTURE." Start own business; home, office. Booklet describing "Collection of 137 Tested Plans" free. Elife Co., 220-G Grand St., New York 13, N. Y.

NEW "SPONGE" Dish Cloth. Replaces messy dishrags. Banishes dishwashing drudgery. Lightning seller. Samples sent on trial. Kristee 134, Akron, Ohio.

A DRESS yours with every 3 you order for yourself and family. Amazing new bonus plan. Everything Free. Harford Frocks, Dept. A-435, Cincinnati, Ohio.

EXTRA CASH selling Christmas cards, wrappings, stationery. Request catalog, special offer. Atlantic Cards, 3525 Reisterstown Road, Baltimore 15, Md.

WHERE TO Buy 800,000 articles direct from manufacturers. Sent free, "Your Profits Under the Spotlight." Glass Publishing Co., Ellwood City 4, Pa.

BOYS WANTED. Over \$2.00 hour. Sell name plates for front doors. Free Sample. Write Dept. 82, National Engravers, 214 Summer, Boston, Mass.

WOULD YOU pay 3%—first \$350 made? Illustrated book "505 Odd Successful Enterprises" free! Expect something odd! Pacific, Oceanside, Calif.

SHINE SHOES Without "Polish." New Invention. Lightning seller. Shoes gleam like mirror. Samples sent on trial. Kristee 133, Akron, Ohio.

GET INTO the Paint Business! See our ad in Business Opportunities. Standard Industrial Products, Inc., Dept. MI-9, Evansville 4, Ind.

EARN EXTRA Cash Selling Personalized Stationery, Cards, Napkins. Particulars free. Stumpco., South Whitley 1, Ind.

WHERE TO buy 800,000 articles wholesale. Details free. Schibani, Box 1576-A, Birmingham 1, Ala.

GET LOWEST Prices! Balloons—Combs—Novelties. Carleton House, Texas City, Texas.

START A Christmas card imprinting business. Write Dunbar, Sanford, Fla.

OFFICE SUPPLIES

MAILERS, SHIPPERS Labels. Packet usable samples, 10c. Riteway, Sanford 6, Mich.

AUTHORS' SERVICE

I WANT new writers to cash checks of \$1 to \$100 offered daily. The easiest way to write for pay. No previous experience necessary. FREE DETAILS. Saunders M. Cummings, 468-14 Independence Bldg., Colorado Springs, Colo.

AVIATION

PASS YOUR C.A.A. exams with Ross guaranteed questionnaires. Free folder. Ross Aero Publishers, Tulsa, Okla.

BUILD, FLY Bullet Raceplane. Fast, light monoplane. Blueprints \$2.00. Corbcraft, 80-C Maxwell, Rochester 11, N. Y.

PROPELLERS, PLANS, skis, for ice-snow sleighs, air boats. Catalog 10c. Banks-Maxwell, R.F.D. 12, Ft. Worth.

JET ENGINE \$3.00; Plans \$1.00; Literature 10c; M.E.W., 387 University, St. Paul, Minn.

BARGAINS

RECEIVE BUSHEL basket free valuable merchandise! Postal brings "free items" list. Athans, 2815-A Vaughn, Fort Worth 5, Texas.

LADIES RAYON hose, 48-51 gauge, full fashioned, irregulars, 8/2 to 10/2 postpaid, 6 pairs \$2.00. Kendrick Brownell, Theresa, N. Y.

SEE OUR ad under motorscooters for Midget Car Bargains. Midget Motors Directory, Athens, Ohio.

FOR BARGAINS in leather belts, look for our ad under Personal. Jaycee Leather.

SALESMEN WANTED

STOP! WANT to make money all year round selling a complete line, with Wool Uniforms, Shirts, Caps, Ties, Badges, 2000 Emblems, Personal Initialed Buckles, Belts and hundreds of other easy-to-sell items. Sales kit furnished. Please write today. Hook-Fast Company, Box 480MI, Roanoke, Va.

ADVERTISING BOOK matches—Cash in big demand—sell Union Label matches. Cuts for all business and political parties—Free powerhouse selling kit—low prices—protection guaranteed on repeat orders—Cash commissions. Superior Match Co., Dept. F99, 7530 Greenwood, Chicago.

SALESMEN—PUT yourself in line for big money, real future. Keep stores supplied with 5c-10c counter goods. Nationally advertised merchandise. Top profits for you and merchants. Liberal deals boost sales. Sideline or full time. World's Products, Dept. 14-X, Spencer, Ind.

SELL DUPONT Nylon Uniforms. Sell complete line famous Hoover uniforms for beauty shops, nurses, doctors, waitresses, others. Exclusive styles, best quality, splendid values. Exceptional income. Real future. Equipment free. Write fully. Hoover, Dept. A-102, New York 11, N. Y.

NEW JOBS open in selling! Send name, address for five free issues of Opportunity Magazine's money-making guide, listing hundreds of companies who'll pay you well, full or part-time. No experience needed. Opportunity, 28 E. Jackson, Dept. 19, Chicago 4, Ill.

SALESMEN. EARN \$100.00 weekly, selling only six pair shoes daily. Commission and bonus. Wide variety for men, women, children. No investment. Experience unnecessary. Free catalog. Tanners Shoes, 519 Boston, Mass.

RUN THE Best "Shoe Store Business" in your town: Make big money without investment. Get training, fit men, women. Free Sample Outfit—Write Today! Consolidated Shoe System, Dept. 5-422, Chipewa Falls, Wis.

BIG MONEY Taking Orders; Shirts, ties, socks, pants, jackets, sweaters, shoes, uniforms, etc. Sales equipment Free. Experience unnecessary. Nimrod, 4922-AR Lincoln, Chicago.

UP TO \$50.00 in a week and tailored suit for yourself without paying one cent. Write for plan. Progress Tailoring Co., Dept. W-184, Congress & Throop, Chicago 7, Ill.

EARN BIG Money Fast! Sell finest-quality advertising work uniforms to garages, factories, filling stations, etc. Free selling kit. Topps, Dept. 141-949, Rochester, Ind.

WRITE FOR Wholesale Deal on Slot Machines, Punchboards, Home Bars. Webb Distributing Co., 4958 W. Chicago Ave., Dept. 88, Chicago 51, Ill.

GET INTO the Paint Business! See our ad in Business Opportunities. Standard Industrial Products, Inc., Dept. MI-9, Evansville 4, Ind.

BUSINESS OPPORTUNITIES

COIN MACHINES earn big money! Machines at \$10.50 earn as high as \$5.00 weekly profit. Place machines in stores, hotels, filling stations, etc., and your income starts immediately. Routes can be operated in spare or full time with no experience needed. We'll tell you how and send you a catalog describing our nut, candy, gum and postage vendors; also pinball machines, music boxes, etc. Write immediately to Parkway Machine Corporation, Dept. 15, 823 W. North Avenue, Baltimore, Md.

MAKE MONEY spare or full time, casting Metal Toys and Novelties. Big wholesale and chain store demand for cast Metal Autos, Soldiers, Ashtrays, Banks, etc., keeps manufacturers busy. Production moulds furnished for up to 100 and more castings per hour. No experience or special place necessary. "Cash-in" on holiday orders now being placed. Write for full information and illustrations of patterns needed. Metal Cast Products Co., Dept. 2, 1676 Boston Road, New York 60, N. Y.

BRUSH PLATING Outfits connect to a battery. No tanks necessary. Almost as simple as painting. Your opportunity to make good income plating, autoparts, bathroom fixtures, reflectors, mirrors. Get free proof and particulars that put you in a paying business of your own. Gunmetal Co., Ave. A, Decatur, Ill.

BIG MONEY. Spare or full time in your home. No selling! Spray New Miracle Finishes, Plush and Suede, on signs, radios, automobiles, figurines, lamps, toys, etc. Our business is booming. Help us fill huge demand. New easy Flok-Kraft methods. Material costs few pennies. You get dollars. Free samples. Complete powerful money making plan free. Write now! Coast, 1022 A. S. Los Angeles St., Los Angeles 15.

GET INTO the Paint Business! Help fill increasing demand for top quality guaranteed house paints, roof coating, interior finishes, specialties. Sell direct from long-established manufacturer, full or part time, permanent; advance commissions, no investment. Particulars free, or send 50c for Sales Kit and start next week. Standard Industrial Products, Inc., Dept. M1-9, Evansville 4, Ind.

START YOUR OWN Business On Credit. Always your own boss. 1954 Dealers, sold \$5,000 to \$26,500 in 1948; their average \$6,742. We supply stocks, equipment on credit. 200 home necessities. Sales experience not needed to start. Wonderful opportunity to own pleasant, profitable business backed by world-wide industry. Write Rawleigh Co., Dept. I-U-MOM, Freeport, Ill.

AMAZING. MARBLE-GLAZED cement pottery, Hollywood style, without molds. Benches, fountains, stucco-rock walls, garden ornaments; chemically colored. Dime brings sample, pictures. Hollywood Cementcraft, 8527-F Wonderland, Hollywood 46, Calif.

MAGAZINES—CURRENT copies. Sports, hobbies, business, manufacturing, professions, agriculture, live stock, poultry, educational, mail order, advertising, art, etc. Free price list. Commercial Engraving Publishing Co., 34W North Ritter, Indianapolis 19, Ind.

COLORGLAZED CONCRETE pottery made without molds. Patented method. Cemetery products, novelties, files. Basement leak-sealing. Money-making projects. Booklet, details free. Men only. National Pottery, Grand Rapids, Minnesota.

MAKE MONEY making new greaseless doughnuts at home with electric machine. Wholesale to grocers, drug stores, cafes, hamburger shops. Send for free recipes and plans. Irving Ray Company, 3605 South 15 Ave., Minneapolis 7, Minn.

A FACTORY in your home garage! Mfg. and sales rights, mechanics' waterless hand cleaner. \$500-\$800 monthly. No special equipment necessary. Formula Free. Western Aircraft Mfg., Dept. H, Los Angeles 6, Calif.

"SPECIALTY MANUFACTURING." Big money business. Start on small capital with dependable formulas. Send for free interesting booklet. Howard Robinson, Ph. G., 1300-D South Ohio Street, Sedalia, Mo.

WEAVING MOTH-HOLES, burns, tears in wearing apparel from your own home or store. Method copyrighted. Work done by hand. \$120. Amber Weaving Service, 411 Main Street, Buffalo 3, N. Y.

DELIGHTFUL PLANS from Australia, South America. Free Book "372 Unusual Worldwide Businesses." \$800 month reported. Work home (U.S.A.)! Get surprise! Publishers-7C, Carlsbad, Calif.

\$3.41 PROFIT PER HOUR interest you? Easy, amazing process velveteens interiors, signs, novelties, radios, lamps at low cost. Free sample. Sparks-E, 1145 Queenanne Place, Los Angeles 6.

WOULD YOU pay 3%—first \$350 made? Illustrated book "505 Odd Successful Enterprises" free! Work home. Expect something odd! Pacific, Oceanstate, Calif.

ELECTRONIC DOOR Lock! Sensational! Invisible! Positive protection! Inexpensive! Tremendous profits! Aynesworth, 17544 Raymer, Northridge, Calif.

LEARN PIANO Tuning, repairing at home. Tremendous field! Piano parts, tools furnished. Established 1935. Empire School of Piano Tuning, 406 East University Ave., Champaign, Ill.

BE YOUR own boss, profitable Radiator Repairing, Cleaning, Recoring. Low cost, small shop layout. Trade secrets, Instructions, Photographs, \$3.95. Radiatorman, Hayward, Wisc.

MAKE STRANGE plastic—1c pound. Makes attractive floors, walls, roofs built-in. Build charming home yourself \$150.00 room. Bays Laboratory, Oklahoma City 9.

LEARN SEWING Machine Repairing at home. Install our wholesale motor kits. Make \$125 to \$300 in a week. Free particulars. Taylor Service Co., Hamilton MI, Ohio.

HOW TO Set Up and Run A Mirror Shop! Resilver Mirrors. Make chipped glass nameplates. Electroplating Salts and Rectifiers. John Sprinkle V33, Marion, Ind.

400% PROFIT MANUFACTURING—Distilling Postwar Hand Cleaner. (Not Ammonia—Kerosene!) Free literature. Rythmo-D-Ex, Kingsport, Tenn.

HEAVY DEMAND for luminous paint. You manufacture, 5 formulae, five different colors, all \$1.00. House of Lee, Box 516, Salt Lake City, Utah.

MAIL ORDER Offers increased income, Independence, Unlimited Possibilities. Free Literature. Manhattan House, 126 Lexington, New York 16.

MAILING POSTCARDS selling repeat merchandise is profitable. Everything supplied. Details free. Gordin Publishers, Box 23, Pawtucket, R. I.

FLEXIBLE MOLD compound. Perfect. Fast, special introductory offer \$1.00. Sample 10c. RAD Laboratories, Dept. G, Box 605, Lynbrook, N. Y.

SELL BY Mail. Unusual Opportunities. 10c brings 60 page informative trade magazine, isabel, Suite 619-MM, 216 West Jackson, Chicago 6, Ill.

START OWN Business—home, office; booklet describing "137 Business Plans" free. Elite Co., 220-G Grand Street, New York 13, N. Y.

FISHWORMS. EASY raise, sell, hundreds, millions. Surface without digging. Instructions 50c. Charles, 12-AQG, Norwood, Ohio.

100 WAYS TO use Luminous Paint. (Shines in Dark) Write for details. Hurry, Supply may be limited. Bookmart, Westbrook-1, Conn.

EXTRA MONEY—No selling—operate vendors. Amazing profits, details free. Silver King, Suite 280, 622 Diversy, Chicago 14.

FREE FOLIO. Wholesale supply sources. Business deals. Plans. Ideas. Formulas. Kalamite Company, Box 572 M., Dayton, Ohio.

MAKE—PERFUME—Profitable mailorder business. Information Free. "International." 6347 Parnell—M1-9, Chicago 21, Ill.

HOSIERY, HANDKERCHIEFS, Shirts, Sheets; Wholesalers write for prices. Spartan Hosiery Company, Spartanburg, S. C.

\$25 WEEKLY WORKING two hours daily. No canvassing. No manufacturing. Lycke, Box 2471, Cleveland 12, Ohio.

UNPAINTED FIGURINES — Wholesale—Retail. Illustrated list free! Oman, 642P Broadway, St. Paul 1, Minnesota.

MANUFACTURE CLEANERS—Flavors—Cosmetics—Polishes. Formula Catalog Free. Kemico, Parkridge 60, Ill.

BE YOUR own boss. Metallize baby shoes at home spare time; your own business. H. Schwieger, Coloma, Wisc.

UNPAINTED BOOKENDS, Plaques, Orna-ments. List. Haverly Products, 1219-M 8th Ave., Altoona, Penna.

OPERATE PROFITABLE Lettershop Business. Write Woods Letter Service, Bedford, Penna.

"DEPRESSION INSURANCE!" Own money-making business. Information free! Pru-J-Ex, Kingsport, Tenn.

SAVE! MILLION Articles wholesale. Directory 25c (refundable). Publishers, Box 1302-B7, Detroit 31.

TIN CANS. Turn them into cash. Nine methods. Instructions 50c. Charles, 12-AQG, Norwood, Ohio.

START VENDING Machine route, instructions \$1.00. Write National 4243 Sansom, Philadelphia, Pa.

\$46 FROM SQUARE Foot Plywood. Jigsaw necessary. Write, Woodarts, X-57, Bridgewater, Mass.

LIQUID RUBBER. Make flexible molds. Free sample. Chaney, 1130 E. 16th St., Jacksonville 6, Fla.

SELL BY Mail! Ideas galore! Join Club! Details free! Wehner, Box 142-B, Roxbury 19, Mass.

RECAST OLD batteries into new. Latest Achievements. Battery Laboratories, Minneapolis.

300 WOMEN MAILORDER buyers listed \$1.00. Woods Remnants, Bedford, Penna.

BECOME A Finance Man. Particulars Free. George Lenhoff, Lincoln 8, Neb.

FEET HURT? Valuable outstanding offer. Corson, 2638 Geyer, St. Louis 4, Mo.

BABY SHOE Heralding. We teach you how. Schoettle, Friendship 3, Ohio.

WANT PROFITABLE Home Work? Write Sunrae Products, Ogema 4, Wis.

CANDYMAKING

"EVERYBODY LIKES Candy." Learn to make professionally. (Our 39th year.) Ragdale Candies, D16, East Orange, N. J.

CARTOONING, SIGNPAINTING, DRAWING AIDS

CARTOONING AND Life Figure Drawing. Learn our modern system and make money doing advertising art. Amazing set of 5 easy lessons. Send only \$2. Waller Art Studios, Dept. 4, 1000 N. Charles St., Baltimore 1, Md.

"HOW TO Make Money With Simple Cartoons"—a book everyone who likes to draw should have. It is free; no obligation. Simply address Cartoonists Exchange, Dept. 359, Pleasant Hill, Ohio.

EARN MONEY evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle (3-B), Wis.

SIGN PAINTING taught at home. Test lesson free. Ben Kerns, Box 812, M. Greenville, S. C.

INTERESTED in Cartooning? Write, Cartoons, P. O. Box 3291, San Francisco 19, Calif.

CHEMICALS & SUPPLIES

NEW LABORATORY Supply Catalog of Chemicals and Apparatus. Contains many thousands of items, with illustrations. Send 25c. Standard Science Supply Company, 1232 N. Paulina St., Chicago 22.

HANDBOOK FOR Chemical Experimenters, illustrated, hundreds of experiments, 50c. Experiment booklet, 15c. Reading Scientific Company, Reading, Penna.

EDUCATION & INSTRUCTION

PIANO TUNING pays. Learn this profitable profession at home. Our Tonometer and mechanical aids make learning easy. No knowledge music necessary. Diploma granted. Largest and oldest school—51st year. G.I. approved. Write for booklet. Niles Bryant School, 87 Bryant Bldg., Washington 16, D. C.

EXPORT! LEARN at home from established World Trader. Big paying positions. Your own profitable world-wide business by mail order without capital; or travel abroad. Experience unnecessary. Free booklet. Mellinger, 309 W. Los Angeles 24, Calif.

BOOKKEEPERS! INCREASE your earnings! Operate your own simplified "Dollar-A-Week" Bookkeeping and Tax Service. Full or spare time. Details FREE. No obligation. Ellis, Box 202, Cedar Grove, N. C.

WATCH REPAIRING. Learn at home. Constant supervision under watchmaker instructor. Inexpensive, pay as you learn. Simplified course. L. Shea, 422 Bloomfield Ave., Caldwell, N. J.

MEDICAL LABORATORY Technicians in great demand. We train you in your own home. Catalogue free. Imperial Technical Institute, Box 973-A, Austin, Tex.

DEGREES: Home Study, Catalogue, Arts, Sciences, Philosophy, Psychology, Metaphysics, "Esoteric" School Sciences, Chesterfield, Indiana.

MAKE UP TO \$35-\$45 Week as a Trained Practical Nurse! Learn quickly at home. Booklet free. Chicago School of Nursing, Dept. M-8, Chicago.

STUDY FOR game warden, fish, park, forestry, and patrol exams. Details free. Write Delmar Institute, C19, Denver, Colo.

HOME STUDY course, drugless therapy. Free Literature. Inst. of Drugless Therapy, Tama, Iowa.

LEARN DEEP Sea Diving. Instruction manual \$2.00. Underwater, Box 4844, Miami 29, Fla.

3800 LATEST USED Correspondence courses. Catalog 50c. Eg, Elmsford, N. Y.

PIANO TUNING, complete course \$1.00 postpaid. Boyle, Clinton, N. Y.

FORMULAS & PLANS

CONCENTRATED VEGETABLES. Highest grade, raw, dehydrated, in tablet and powder form. No drugs. Write today for free circular. Kiro Concentrated Foods, Tama, Iowa.

OVER 100 FORMULAS—profitable book only \$5.00 postpaid. Charlow Company, Box 223, State Capitol, Albany 1, New York.

REAL MANUFACTURING formulas. Lists free. W. Cummings, Chemist, Gordon Ave., Syracuse, N. Y.

LABORATORY TESTED Formulas. Lists Free. Pont Chemical Company, Terre Haute 3, Ind.

FREE FORMULA Catalog. Anything Analyzed \$20.00. Western Chemical, Salem, Ore.

HANDWRITING ANALYSIS

HANDWRITING REVEALS Character:—For Free Information Bulletin On This Most Interesting Science Send Name And Address To: Analyst, Box 6124, Station B, Albuquerque, New Mexico.

MAILING LISTS

REDHOT PROSPECTS, Buyers. \$5.00, 1000. Free Prospectus. Dixie Service, King, N. C.

PROSPECTS, BUYERS. 100, \$1.00. 1000, \$4.00. Kendrick Brownell, Theresa, N. Y.

MALE HELP

INTERESTED in Latin American and foreign employment???? \$1.00 brings copyrighted Foreign Service Directory listing firms interested in Oil, Construction, Mining, Aviation, Exports and Imports. How-When-Where to apply. Hot list of companies hiring. Global Reports, Dept. M1, P.O. Box 883, Hollywood 28, Calif.

FOREIGN EMPLOYMENT for you. Excellent permanent job opportunities for U. S. Citizens. Wages at least 20% higher, less taxation, lower living costs. Improved Social Position. Transportation and housing furnished. Choice of climate and location. South and Central America, Far East, China, Alaska, Australia, New Zealand, Africa. Send \$1.00 for copyrighted digest showing oil, shipping, construction, mining, etc., companies working and hiring. Includes sample application letter, advice on wages, tips, etc. World Wide Company, Dept. M1-9, Madison 1, Wis.

"ALASKA—THE Last Frontier" offers unlimited opportunities. \$1.00 brings official government map and copyrighted report with Fish and Game rules, listing Fishing, Construction, Mining, Aviation companies. Homestead and Alaskan Highway information. Alaska Opportunist, Dept. M1, P.O. Box 883, Hollywood 28, Calif.

CONSTRUCTION REPORT World Wide Listings of Projects for Journeymen in all trades published monthly. \$1 per copy. Global Reports, P.O. Box 883-MX, Hollywood 28, Calif.

IMMEDIATE OPENING for reliable man with car to call on farmers. No experience necessary. \$15 to \$20 in a day! Permanent. Mc Ness Company, Dept. 175, Freeport, Ill.

FOREIGN EMPLOYMENT! Booklet listing firms hiring. 50c. R. Carmody, 76 Wealth Ave., Providence 8, R. I.

MONEYMAKING OPPORTUNITIES

START YOUR Own Business On Credit. Always your own boss. 1554 Dealers, sold \$5,000 to \$26,500 in 1948; their average \$8,742. We supply stocks, equipment on credit, 200 home necessities. Sales experience not needed to start. Wonderful opportunity to own pleasant, profitable business backed by world-wide industry. Write Rawleigh Co., Dept. I-U-MOM, Freeport, Ill.

VENDING MACHINES—No selling required. Send for Free 32-page illustrated catalog describing our numerous coin machines; also showing you how you can earn Amazing Profits either full or spare time. Parkway Machine Corporation, Dept. # 5, 623 W. North Avenue, Baltimore 17, Md.

BRONZING BABY Shoes—Start on \$5.00, spare time. Complete course; instructions, formulas, sources, selling ideas. \$2.50 postpaid. Guaranteed. Bronzing Course, 431 South Massey Street, Water-town, New York.

INVENTOR OFFERS 1/2 of all royalties received through your suggestions. Sample model and full particulars \$2.00. Write today. F. Kawa, 4828 S. Damen Ave., Chicago 9, Ill.

MAKE EXTRA money at home in spare time. Raise Golden Hamsters. Small investment. Literature free. Golden Gate Hamstery, 631-L Richmond Street, El Cerrito, Calif.

ELITE COLLECTION. New edition, contains 137 practical Money-Making Plans, local and mail order. Particulars free. Elite Co., 220-G Grand St., New York 13, N. Y.

HITCH YOUR Wagon to a Conte Star! Win huge cash prizes, automobiles, new homes, etc. Enclose 3c stamp. National Contest Bulletin, Box 2685-R, Miami 31, Fla.

SENSATIONAL HAND Cleaner! (Not Ammonia—Kerosene!) 400% Profit. Free Manufacturing — Distributing Methods. Rhythmo-G-Ex, Kingsport, Tenn.

MONEY FROM wood scraps with band-saw or jigsaw. Sell anywhere. Send \$1 for article and instructions. Woodcraft, 1017 Nelson, Webb City, Mo.

DYNAMIC BOOKS for mail order "money-getters." Send for ideas for success. William Baker, 87 Boiling Springs Avenue, East Rutherford, N. J.

WOULD YOU pay 3%—first \$350 made? Illustrated book "505 Odd Successful Enterprises" free! Expect something odd! Pacific, Oceanide, Calif.

THERE'S MONEY in trade journal writing. Learn with established writer. Criticism per manuscript \$1.00. Alvin Bantien, Armada, Mich.

400% PROFIT MAKING signs, posters, etc., for business places. Simple process, folder free. Ryane's, Box 16, Buffalo 15-L, N. Y.

DETECTIVES EARN Big Money. Experience unnecessary. Particulars free. George Wagoner, 125-J West 86th, N. Y.

EARN MONEY evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle (3), Wis.

SAWDUST. TURN It Into Cash. Six methods. Instructions 25c. Zaragoza, P. O. Box 125, Philadelphia 5, Pa.

MAIL ORDER opportunities galore. Write today: Sanchez, Box 66-C, Chelsea Station, New York 10.

\$\$\$ IN READY-CUT baby shoes. Complete mail order plan. Write today. No-Cor, Oakland 6-A, Calif.

UNUSUAL MAIL order—home work opportunities. Guthrie, 2125-F Maryland Ave., Norfolk 13, Va.

FREE, PARTICULARS of "Money Making Plans." A. Pierce, Box 235, St. Louis 3, Mo.

PROFITABLE OCCUPATIONS

YOUR OWN profitable home business. Preserve live flowers to last forever. New simple discovery. Enormous demand all year 'round. Tremendous profits! Light fascinating work. Send \$2.00 for working equipment, instructions, and valuable sales plans. Satisfaction guaranteed or money promptly refunded. Alfred Hermansen, 210 Fifth Ave., Suite 102B, New York 10, N. Y.

SENSATIONAL! It's easy to earn big money with your own profitable business. Earn \$10.00 to \$50.00 a day. Make lamps at home. General illustrated course teaches you quickly. Course and wholesale supply catalog only \$2.00. Gearon Company, Dept. 200-CY, 27 South Desplaines, Chicago, Ill.

LOOK HERE! Wanted—Men and women to start in business on credit. Sell some 200 farm-home products. Thousands of Dealers now make quick sales, big profits. For particulars write Rawleigh's, Dept. I-192 MOM, Freeport, Ill.

MAKE HOLIDAY Flowers, Novelties. Wonderful home business pays excellent profits. Literature free. Velva Artcraft, 324-V East 14, New York 3, N. Y.

BABY SHOE Bronzing! It's fun . . . it's profitable! Write for Free information kit today. Baby-Brite, Dept. D-17, 3808 Benefit Street, Baltimore 24, Md.

\$40.00 WEEKLY, MADE growing mushrooms, Fresh Dried, Dominion Patent 321583. Free Spawm, North American, 169M Yonge, Toronto, Canada.

COLOR ETCH. Learn to etch color pictures and designs in glass. Sample and directions \$1.00. Roger Hopp, 2314 Devo, Memphis, Tenn.

ANIMALS, BIRDS, Snakes. Excellent and profitable hobby. Send 10c for complete illustrated price list. Snake King, Brownsville, Texas.

\$5,000 FROM HALF acre growing Ginseng, crop bought. Particulars 10c. Associated Growers, 1169 Corydon, Winnipeg, Canada.

"RAISE FROGS!" New book explains everything. Write today. Marlboro-C, Box 7002, New Orleans 19, La.

DETECTIVES—MAKE Secret Investigations. Interesting occupation. Write, George Wagner, J-125 West 86th St., New York 24, -

RAISE FISHWORMS, Easy, Profitable. Send 25c in coin for complete instructions. Huffmans Worm Ranch, Rives Junction, Mich.

\$400.00 MONTHLY, RAISING Angora Rabbits. Particulars free. White's Rabbitry, Newark, Ohio.

RADIO SUPPLIES & INSTRUCTION

HEADPHONES, GUARANTEED U. S. Signal Corps used headsets with adjustable leather headbands and Black Bakelite Earphones. Special now \$1.99. Allen Radio, Dept. HMI, Clinton, Mo.

MAKE SIMPLE, tubeless, batteryless, distance-getting crystal radios. Crystal and illustrated instructions 25 cents postpaid. Allen, 427-M, Clinton, Mo.

TINY-TONE EXPERIMENTAL Microphone Kit. 50c postpaid. Buckmann, 215 River, Hackensack, N. J.

"RADIOBUILDER," 3 ISSUES 25c. Sample free. Catalog, Laboratories, 578-K, San Carlos, Calif.

MAKE FAMOUS, sensitive, crystal radios. Instructions, crystal, feelers 25c. Borri Mark, Ill.

STAMMERING

STUTTERING OR stammering corrected at home. Lessons have helped hundreds gain good speech. Send for free, helpful literature. The Athenium, M-9, 1714 Chestnut, St. Louis 3, Mo.

STOP STAMMERING. Instructions \$1.00. J. Allen, Box 114, Saskatoon, Sask., Canada.

TREASURE FINDER

TREASURE-MINERAL LOCATORS. M-Scope. Low Priced, lightweight, unsurpassed in efficiency. Revolutionizes locating of minerals and precious metals. Geiger Counters for Uranium ore. Time payment plan. Factory guaranteed. Free 16-page booklet upon request. Fisher Research Laboratory, Inc., Palo Alto, Calif.

GOLD, SILVER and mineral locating revolutionized by Goldak's new feather-weight Model 101. Free information. The Goldak Company, 1546 West Glenoaks, Glendale 1, Calif.

METAL DETECTORS. The very latest circuit. Send 25c for literature. Hedden Metal Detectors, 3329 Liberty Ave., Pittsburgh 1, Penna.

PRINTING, MULTIGRAPHING, MIMEOGRAPHING, ETC.

300 GLOSS BLOTTER Business Cards \$1.00. 250 Name-address Stickers 25c. 500 Regulation Parcelpost Labels \$2.00. 2000 3"x6" Circulars \$3.00. Acmeprint-7, Hendersonville 5, N. C.

CAMELGRAMS (PERSONALIZED Penny Postals) give dignity to correspondence, orders, inquiries. Neatly-printed— inexpensive. Sample free. Camelgrams, Urbana 6, Ill.

GENERAL PRINTING: Business stationery, cards, labels. 500 name, address stickers, 50c. Myers Company, 1228 Adams, Okla., Mich.

MIMEOGRAPHING PRICE List free. Cards, letters, drawings. Loyal Brush, 3303 Paseo, Kansas City 3, Mo.

1000 BUSINESS CARDS \$2.50 Prepaid. Samples Free. Reliable Print Shop, 905 E. Jefferson, Louisville 6, Ky.

MIMEOGRAPHING—ANY Copy. Reasonable. F. Dobronsky, 30-74 32 Street, Astoria 2, N. Y. (4-D)

YOUR RETURN address printed on 500 envelopes \$2.95, 5000, \$24.95. Harold Haus, Lancaster, Ohio.

PRICES REDUCED—Office Supplies and Printing. Free Catalog. Eddy Co., Southington 2, Conn.

1000 BUSINESS CARDS—\$1.85 prepaid. CPR Sales, 914 E. 217 St., New York 67, N. Y.

200 NAME-ADDRESS STICKERS 25c. Kay Press, 1560 South Fifth, Milwaukee 4, Wis.

PRINTING OUTFITS & SUPPLIES

PRINT YOUR own cards, stationery, circulars, advertising. Save money. Simple rules. Print for others, nice profit. Raised printing like engraving too. Have home shop. Details free. Kelsey Presses, J-57, Meriden, Conn.

MAKE YOUR own rubber printing cuts. Self-molding process. Plexirubber, Argyle (3), Wisconsin.

RUBBER STAMPS & MARKING DEVICES

3 LINES 30c; 4-40c, cushioned, knob handle, catalog free. Warner, 335 Grace, Havre De Grace, Md.

READY MADE stock stamps. Big list. Criterion Stamps, P.O. Box 2326, Denver 26, Colo.

TYPEWRITERS, DUPLICATORS, OFFICE DEVICES

ADVERTISE. INCREASE business. "Printomatic" selffeeding "Mimeograph" Post Card Duplicator prints, reproduces, thousands anything typewritten, hand-written, \$13.50. Literature. Pittsburgh Typewriter Company, 336-1 Fourth Avenue, Pittsburgh 22, Pa.

HOBBIES & COLLECTIONS

TOKEN COLLECTORS Let's trade tax tokens. Send 10c Coin or Stamps for particulars. Cook, 1301 West Adams, Phoenix, Ariz.

THREE MILITARY Emblems and price list 10c. Hobbyguild, 57M Sumner Ave., Brooklyn, N. Y.

RARE COINS

MAGNIFICENT STOCK of U. S. coins. All series. Catalogue listing 2500 coins 15c. \$50,000.00 stock of gold coins. World-wide selection. Catalogue 15c. James Randall, 116 South Michigan Avenue, Chicago 3, Ill.

FREE! FOREIGN Coin, banknote and Coin Collectors Illustrated Catalog to approval service applicants. Send 3c postage. Tatham Coinco, Springfield 9, Mass.

3-LEGGED BUFFALO Nickel \$1.25, 20 Coins from 20 Countries \$1.00. Giant Bargain Catalogue 15c. Bebee Coin Company, 1180 63rd, Chicago 37, Ill.

COMMEMORATIVE \$1/2—WASHINGTON, Stone Mountain, Columbian, \$1.50 each. Illustrated Catalogue, 25c. Shultz, Salt Lake 9, Utah.

100 DIFFERENT FOREIGN Coins \$3.00. Parker, 1254 Market, San Francisco 2, Calif.

COINS WANTED: Itemized list 20c. Elsholz, Box 9014, Pittsburgh 24, Penna.

STAMP COLLECTING

COLD-BLOODED M-ur-d-e-r! 200 British Empire Stamps: Contains new colonies of Norfolk and Tokelau Islands; Grahamland (Britain's only colony at the South Pole); Pakistan; Nepal; Big stamp commemorating murdered Mahatma Gandhi; many other fascinating varieties, including stamps cataloging up to 20c each! Amazingly low price (with approvals) only 10c! Kenmore Stamp Co., Section 17, Arlington 74, Mass.

ZOWIE-E-E! A Barrel of Fun for only a Dime! 500 United States Stamps—Absolutely unpicked and unsorted—just as received from church missions. Many varieties, including large commemoratives, airmails, high denominations up to \$5.00! Stampdom's biggest package of fun—and you might find something really valuable! Price only 10c to serious approval service applicants. Money back if not delighted. Illustrated bargain lists with each order. Mystic Stamp Company, Department 30, Camden, New York.

FREE—FAMOUS Americans Set, plus Flag Set, plus the National Parks set, plus the Presidential Set to the \$5. A total of 90 stamps absolutely Free to customers for our unsurpassed United States or Foreign selections. Send 3c postage for 15 of the above mentioned stamps and full particulars. Triboro Stamp Company, 145 Nassau Street, Dept. 309, New York.

YOU NEED these! All six for 10c! To introduce our Exceptional Approval Service, we'll send you: 1. Pocket Stock Book. 2. Watermark Detector. 3. Stamp Tong. 4. Perforation Gauge. 5. Book for Duplicates. 6. Package of Stamp Hinges. All only 10c to approval applicants! Free! Big list other bargains. Jamestown Stamp Co., Dept. N, Jamestown, New York.

GIBRALTAR PACKET Free—Nice collection Gibraltar—New Zealand Centennial—British Uganda—French Colonials—Early British Colonial—West Indies—South America—War stamps plus Philatelic Monthly Magazine. All for 3c postage. Empire Stamp Company, Dept. MM, Toronto 5, Ontario.

WOW! \$10.00 WORTH of Fun 10c! What a treasure hunt! Big package 500 Foreign Stamps, including airmails, pictorials and others from the world over; stamp worth up to 25c each. This offer sent for 10c to Approval Applicants Only. Jamestown Stamp Co., Dept. 31, Jamestown, N. Y.

FREE! NEGRO Triangle; Turks Islands "Cactus"; Dakar; Guinea; Palestine; "Fairy Tale," Pirate Chart, Map, Sea Lion, Snake stamps; French, British, Portuguese Colonies, etc. Free for 3c postage. Approvals. Potomac Stampshop, Washington 10, D. C.

FREE! COLLECTION over 100 stamps of world—odd stamps, planes, camels, cavalry charge, leprosy stamp, new Leipzig Fair set, many others all to approval buyers; plus Scott International Albums, stamp catalogs, Bell Stamp Service, Dept. C, 4248 Elizabeth St., Bell, Calif. \$1—\$5 UNITED STATES, Commemoratives, airmail, high values in large collection United States stamps only 5c to applicants. United States approvals. Metropolitan, 140C Nassau, New York 7.

LION TRIANGLE, Biggest Diamond. San Marino showing First American Stamp, Canal Zone, Constantine, Rheinland, and 26 Different Others—All 5c. Approvals. Grayson Stampco, Sherman, Tex.

307 ALL DIFFERENT 10c. Commemoratives, triangles, bicolored beauties, high values. Strange countries. New varieties galore. Only 10c with approvals. Garcelon, Box 475, Calais, Me.

UNITED STATES Stamps nearly 100 years old, Roosevelt set, others, 40c value—only 5c to applicants United States approvals. Wakonda, 140L Nassau, New York 7.

WORLD'S LARGEST Stamp (7 1/2x14 inches). A real curiosity! Retail for 50c, only 3c to approval applicants. Tatham Stamp Co., Springfield 9, Mass.

FREE! CANADIAN sets, Royal Visit, George VI, George V, Coronation, Jubilee, others, to approval applicants. Ensign, Box 118-X, South Orange, N. J.

FREE "STAMP Finder." Tells instantly country to which any stamp belongs. 32 pages profusely illustrated. Approvals. Garcelon, Calais, 10, Me.

UNITED STATES approvals, complete coverage, fine quality, attractive prices. Seminole Stamps, Box 1138-M, Coral Gables, Fla.

COSTA RICA Mint Diamond Airmail Set 10c with Approvals, Vargo Stamps, 6044 South Fairfield, Chicago 29, Ill.

OLD SCARCE U. S. Seconds on Approval. Slightly Defective. Bargain Prices. Herffelder, Clintonhill Station, Newark 8, N. J.

TOPS! Our booklet "How To Collect Stamps!" Send for your free copy today! Littleton Stampco, Littleton 30, N. H.

TREASURE HUNT Approvals penny stamps galore. Send today for selection. Reed Company, Box 980M, Chicago 90, Ill.

200 DIFFERENT, INCLUDING Roosevelt triangle. 5c to approval applicants. K. Avalon Stamp Co., Springfield, Mass.

FREE CHINA Navigation Issue with Foreign Approvals. Modern Stampco, Box 12C, Wakefield Station, N. Y.

750 FRANCE AND Colonies Stamps only 10c with Approvals. Littleton Stamp Co., Littleton 27, N. H.

50 DIFF. FINLAND 10c with 1/4-1/2-1c approvals. Carroll's, 4357-B. S. Hoover, Los Angeles 37, Calif.

200 MIXED STAMPS 10c. Pictorial Commemoratives included every Packet. Sibley, Mendon, Mass.

128-PAGE UNITED States Catalog—1,000 illustrations—25c. Harris & Co., 201 Transit Bldg., Boston.

1862 PRINCE EDWARD Islands—Just 3c with approvals. Viking, 130-M Clinton St., Brooklyn, N. Y.

250—YES—250 STAMPS, Postmarks, Meters, Seals 25c. Augustine Hoffman, Wickenburg, Ariz.

55 DIFFERENT U. S. stamps 10c, with approvals. Robert Anderson, Route #1, Madrid, Iowa.

FOUND STAMPS containing thousands \$1.00 Longacre Shop, 100-B West 42nd, New York 18.

PENNY APPROVALS that satisfy. Neil Gronberg, Box 5441-M, Philadelphia 43, Penna.

DO YOU want U. S. approvals? Write Edward Wenigman, 1933 Patterson, Chicago.

EXCHANGE STAMPS Universe, particulars free. "Exchangers" BRY 156 Seine, France.

50 DIFFERENT U. S. 10c. No approvals. Pricelist free. Seidenberg, Cassopolis, Mich.

50,000 STAMP GRABBAGS 25c each. Anderson, 630 Bingham, Reading 3, Penna.

PENNY APPROVAL Bargains! Write Department M, 1267 Tutwiler, Memphis 7, Tenn.

VALUE PACKET 70 different 25c Guaranteed. Dr. Moore, Box 623, Oildale, Calif.

100 DIFFERENT FOREIGN 10c. Pricelist Free. Reed's, 2236 MacArthur, Oakland, Calif.

80 NORTH AMERICAN 5c with approvals. Bryson, Drawer F-ML, Rossford, Ohio.

FREE—ILLUSTRATED Catalog. Kenmore Stamp Co., Dept. 41, Arlington 74, Mass.

10 U. S. Over 40 years Old 5c Approvals. Scott, Middle St., Lexington, Mass. 7.

FREE! COMPLETE Balkan aviation set with approvals. Beaman, Leeds 8, Ala.

FREE! ILLUSTRATED United States Catalog. Low Prices! Americo, Bristol, Conn.

FREE! TINY Chinese "Midget" War set Approvals. Seminole, Leeds 8, Ala.

CASH FOR Your Duplicates! Particulars Free. Goliath, Bethlehem 5, N. H.

FREE! CRYSTAL-MOUNT samples! Harris & Co., 201 Transit Bldg., Boston.

BODY-BUILDING COURSES

BAR-BELLS, DUMBBELLS, exercise equipment. Courses. Free booklet. Good Barbell Co., Reading, Penna.

BARBELLS, DUMBBELLS. Inquiries invited. York Barbells (Canada), Scarborough Bluffs, 26, Ont.

HANDBALANCING IS fun! Easily learned. Write. Power, 923 W. Vine, Kalamazoo, Mich.

CHALK TALKS

TRICK CHALK Stunts. Catalog 10c. Cartoonist John Balda, Oshkosh, Wis.

DETECTIVES

DETECTIVES—WORK home—travel. Experience unnecessary. Detective Particulars free. Write. George Wagner, J-125 West 86th, N. Y.

DETECTIVE TRAINING

SPARE TIME study, learn fascinating profession. Men-women, big money. Detectives, investigators trained. Folders free. Barnes Detective, Box 490, Times Square Station, N. Y. 18, N. Y.

DETECTIVE TRAINING. Phillips Secret Service System, 1917G North Kenneth, Chicago 39, Ill.

GAMES—ENTERTAINMENT

TRIPLE-DEAL 10c, OVERBAUGH, P. O. Box 842, Denver 1, Colo.

HYPNOTISM

HOW TO Hypnotize! Amazing, easy-to-learn illustrated, self-study lessons. Complete course—includes: hypnotism over telephone, on stage, conquering timidity, dominating others. Teaches you how to develop your personal power. Full price only \$1.95. Send no money—pay postpaid. C.O.D. Satisfaction or refund! Order "Hypnotism Course" today. Nelson Company, Dept. 2-J3, Chicago 5.

LEARN TO Hypnotize. Yes, Anyone. Selfhypnosis. Step by step you are told exactly what to say and do. Send for "Hypnotism Revealed".....\$1. Twelve-inch Hypnotism Record Inducing Hypnotism, Selfhypnosis.....\$5. Melvin Powers, Professional Hypnotist, 1324 Wilshire, Hollywood 145, California.

SELF-HYPNOSIS. AMAZING new book—guaranteed! \$2.00. Psyche, 542-RR 5th Ave., New York 19, N. Y.

MAGIC TRICKS, JOKERS, PUZZLES

LEARN 50 CARD secrets for a penny apiece. Our book 250 is yours for only 50c. Whoopee cushions, 35c. Tricky dogs, 25c. Itch, sneeze powders, each, 10c. Many more items in our list of magic tricks, joker novelties, etc., one dime or free with order. Behnke Sales, 5721 Leland, Chicago 30, Ill.

500 TRICKS YOU can do! Send 10c for Douglas famous Catalog, best in magic at lowest prices. Unequaled service to magicians for 30 years. Douglas Magicland, Dept. 3, Dallas, Texas.

400-PAGE CATALOG of 2,000 tricks, pocket, parlor, stage. World's finest magic. Send \$1.00 for catalogue (re-funded first \$5.00 order). Kanter's, R-1311 Walnut, Philadelphia 7.

AMAZING GHOST Quarter Trick Free if 25c is sent for Big Illustrated Catalog listing 500 Wonderful Magic Tricks. Rush 25c Now. The Magician, 2463-E Kensington Ave., Phila. 25, Pa.

LARGE 160 PAGE magic catalog 35c for beginners and professionals. Chicago Magic Company, 2300-W No. Mason Avenue, Chicago 39.

500 TRICKS CATALOG and book "84 Card Tricks," both only 50c. Robbins Co., 152-P W. 42nd St., New York.

DOLLAR MAGIC Set Free with Catalog 25! 4462-M Germantown, Philadelphia.

BE A Magician. Large professional magic catalog of latest tricks, 35c. Ireland, 107 North Dearborn, Chicago 2.

WE SUPPLY every noted magician. Large Professional catalog 50c. Holden, 222 West 42nd St., New York.

"VENTRILLO!" PROFESSIONAL Voice-throwing Instrument with Catalog 25c. Box 971-M, Philadelphia.

16 WORLD'S BEST card tricks and catalog 25c. Sterling Magic, Box 191, Royal Oak, Mich.

MAGIC, NOVELTIES, moneymakers. Catalog 10c. Newton Company, Bonham 2, Texas.

DOLLAR MAGIC Set Free with Catalog 25! 2404 N. 15, Philadelphia.

MUSIC INSTRUMENTS & INSTRUCTION

SONG WRITERS, Attention! The amazing demand for phonograph records warrants your immediate investigation. We are offering new writers the services of hit composers on any likely poems on reduced percentage basis. Recola Recording Company, Hollywood 28, Calif.

WRITE SONGS? Fun using "Wonder Wheel" jiffy composer. Perfect harmony, any note, any chord. Folders free. Barnes Enterprises, Box 490 Times Square Station, N. Y. 18, N. Y.

POEMS WANTED for musical setting. Send poems for free examination. Five Star Music Masters, 629 Beacon Bldg., Boston, Mass.

POEMS WANTED for musical setting on percentage basis. Terry, Tune Master, 709 1/2 MI North Broadway, Oklahoma City 2.

YOUR POEMS set to music, recorded. Free booklet, attractive offer. Write. Songland, 331-A W. 46th, New York.

NOVELTIES, ETC.

ATTRACTIVE NOVELTY Letter Opener. Excellent gift 50c. No stamps. Turner, 202 West North, Tampa 4, Fla.

TATTOOING SUPPLIES

TATTOOING OUTFITS. Supplies. Illustrated list Free. Zies, 728 Leslie, Rockford, Ill.

VENTRILLOQUISM

LEARN VENTRILLOQUISM. 3c stamp brings particulars. Smith, Dept. 250, 801 Bigelow, Peoria 5, Ill.

BOOKS, PERIODICALS, PICTURES, POSTCARDS

USED EDUCATIONAL books and courses sold, rented, exchanged. Inexpensive. Money-back guarantee. Lists free. (Books and Courses bought.) Write Lee Mountain, Pisgah, Ala.

BOOKFINDERS! UNUSUAL, scarce, out-of-print books. Quickly supplied. Send wants. Bookfinder Clifton, Box 1377MI, Beverly Hills, Calif.

NATIONAL GEOGRAPHIC Magazines, 1888-1949. Any issue. Periodical Service, Box 327-M, Swarthmore, Penna.
BOOKHUNTERS! ALL subjects. Send wants! Jaher Book Service, 620-M East 178 Street, New York 57.

CAMERAS, EQUIPMENT & PHOTO SUPPLIES

CONTACT PRINTER. Plans and instructions to build MI's famous contact printer now available. Will take all negatives up to and including 4x5 in. as well as postcard size. The easy-to-follow drawings can be used as full-size templates if desired. Send 50c to Fawcett Publications, Inc., Greenwich, Conn., and ask for Feature Plan No. P-1.

ENLARGER: FIFTY cents will buy the complete plans and instructions for the building of MI's Parallel Arm Enlarger. It has been especially designed to accommodate all cameras from a 35mm Argus to a 4x5 Speed Graphic. Your own camera and lens form the optical and focusing system. This enlarger has been built by dozens of enthusiastic amateur photographers. Send your remittance and request to Fawcett Publications, Inc., Greenwich, Conn. Ask for Plan No. P-2A.

35MM ENLARGER. Large-size plans for the construction of an enlarger expressly designed to be used with miniature negatives are now available for readers of MI. This enlarger uses a single condenser which also serves to hold the negative absolutely flat in the focal plane. For the easy-to-follow drawing send 50 cents to the MI Reader Plan Service. Fawcett Publications, Inc., Greenwich, Conn. Ask for Plan No. P-4A.

PHOTOGRAPHY For pleasure or profit. Learn at home. Practical basic training. Long established school. Write for free booklet. American School of Photography, 1315 Michigan, Dept. 204-B, Chicago 5.

MAKE QUICK pictures for big profits. Glossick Mfg. Co., 544 Monson St., Dept. G, East Peoria, Ill.

"CUTTING COST in Photography." Send 25c for this revealing book. HR Service, Box 1017 Newark, N. J.

KODAK MODEL-A 16mm projectors used \$25 each. Warren, 901 Ridge Ave., Pittsburgh, Pa.

HOME MOVIES

UNUSUAL FILM subjects. 8-16mm. Kodachrome projection length sample "Allure," \$1.00 (Refunded). Art slides sample 50c, five for \$2.00. "Strip Polka" 16mm. sound, \$6.50. Exchanges! Bargains! Big catalog with sample film, 25c; refunded first order. Write today. National Film Supply, Broadway Sta. (E), Toledo 9, Ohio.

GUARANTEED FRESH anti-halo outdoor movie film! Weston 12! Daylight loading! Processing free Three spools double 8mm, \$3.45! Six single 8mm for Univex, \$4.60! Postpaid! Catalog. Filmcraft, 47th Hill, Kansas City 2, Mo.

85 KODACHROME MOVIES! War, Atom Bomb, Travel, Air, National Parks, Beautiful Models. Catalog, 3c stamp. 2 scene "Waikiki" sample, 1.00. Specify 8mm. or 16mm. World in Color Productions, Elmira, N. Y.

FREE PROCESSED film. Weston 10 100 ft. 16mm \$3.25. 25 ft. double 8mm \$1.50. Without Processing 100 ft. Double 8mm \$2.35. 16mm \$2.25. Free Circulars. Fromaders, Davenport 8, Iowa.

PHOTO FINISHING

PHOTOGRAPHY For pleasure or profit. Learn at home. Practical basic training. Long established school. Write for free booklet. American School of Photography, 1315 Michigan, Dept. 204I, Chicago 5.

2 BEAUTIFUL HI-GLOSS prints each good negative and enlarging coupon with each 6 or 8 exposure roll developed 28c. Owlphoto Co., Weatherford, Okla.

8 BEAUTIFUL DOUBLE Size pictures and roll developed 30c. 8 hour service. Free Malters. Pacific Photo Service, Box 666, San Francisco, Calif.

LOST YOUR Negative? Send photo and 75c for new negative and enlargement. Lansing Laboratories, Box 729, Glendale, Calif.

MOTION PICTURES & SOUND EQUIPMENT

8-16MM. SILENT-SOUND films. Complete rental library. All latest subjects. Free catalogue (sample film 10c). Garden Film, 317 W. 50th, N. Y. 19.

397 FREE RENTAL Film Stores. Latest Compilation \$1.00. Waverlynn Company, Dept. 5, 436 W. 42nd St., N. Y. 18, N. Y.

AUTOMOBILES—MIDGET CARS

"SPEED & MILEAGE" Manual!—140 Illustrations! Most authoritative and widely read book of its kind! Easily gain up to 40% more speed, power, mileage, from any automobile! Complete instructions on building inexpensive 1-p-e-a-d equipment! Best Sports Cars! "California Hot Rods"! 155 M.P.H. conversions! Superchargers! Dual Manifolds! Twin Mufflers! "Water Injectors"! Heads! Economizers! All about fast engines—Speed Tuning—Restyling—"Customizing"—gas saving—"Racing Tricks"—Fuels—Lowering—Ratios! Latest California methods! "Custom Styling Information"! Streamlined! Sport Changes! Racing Conversions! Working Diagrams! "Hollywood Roadster Plans"! Parts Lists! Drawings! Charts! Photographs!—All Cars! Manual plus "Hot Rod Handbook" and Equipment Catalog—All three \$1.98 (Satisfaction Guaranteed) Alquist Engineering, Milford 2, Penna.

"SPEED & POWER" Handbook—50 chapter Library Edition! Breathtaking methods—Authentic—Direct from California! Covers Fords to Cadillac—all makes! Build your own Dual Manifolds! Superchargers! Hot Cams! Water Injection! Hi-Compression! Heads! Mileage Devices! Save many dollars! Get racing speed, lightning acceleration, dynamic power increases from any make automobile! Build fast Stock Cars! California Roadsters! 150 MPH Rods! Get construction drawings! Tuning Techniques! Speed Tricks! Picture Catalogs! Ingenious formulas! Economy secrets! Including—"Racing Frames"—"Reciprocating Masses"—"Jet Engines"—"Braking Characteristics"—"Dynamometers." Also—Dual Pipes—Gears—Fuels—Porting—Relieving—Lowering—Balancing! Includes "California Automobile Customizing"—Glossy photographs! Diagrams! Very new ideas! Conversions! Re-styling! All makes! Streamlined! Chopping! Channeling! Customizing!—Complete—\$1.98 postpaid. Newhouse Automotive Industries, 5805-C2 East Beverly, Los Angeles 22.

"SPEED & POWER" Handbook—50 chapter Library Edition! Breathtaking methods—Authentic—Direct from California! Covers Fords to Cadillac—all makes! Build your own Dual Manifolds! Superchargers! Hot Cams! Water Injection! Hi-Compression! Heads! Mileage Devices! Save many dollars! Get racing speed, lightning acceleration, dynamic power increases from any make automobile! Build fast Stock Cars! California Roadsters! 150 MPH Rods! Get construction drawings! Tuning Techniques! Speed Tricks! Picture Catalogs! Ingenious formulas! Economy secrets! Including—"Racing Frames"—"Reciprocating Masses"—"Jet Engines"—"Braking Characteristics"—"Dynamometers." Also—Dual Pipes—Gears—Fuels—Porting—Relieving—Lowering—Balancing! Includes "California Automobile Customizing"—Glossy photographs! Diagrams! Very new ideas! Conversions! Re-styling! All makes! Streamlined! Chopping! Channeling! Customizing!—Complete—\$1.98 postpaid. Newhouse Automotive Industries, 5805-C2 East Beverly, Los Angeles 22.

"VAPOR-STEAMATIC" Water Injector. Easily built! Finest automatic "Moist-Humidity" system! Engineering triumph—Gets up to ten extra miles per gallon! Tremendously increases horsepower! Eliminates ping, carbon, overheating! Reduces wear—Lengthens engine life! Copyrighted "Water Injection Handbook"—with working drawings covering automobiles, motorcycles, airplanes, tractors! Includes Plans, Catalogues, Diagrams, Instructions—\$1.00 complete. Newhouse Automotive Industries, 5805-C1 East Beverly, Los Angeles 22.

"SPEED & POWER" Handbook—50 chapter Library Edition! Breathtaking methods—Authentic—Direct from California! Covers Fords to Cadillac—all makes! Build your own Dual Manifolds! Superchargers! Hot Cams! Water Injection! Hi-Compression! Heads! Mileage Devices! Save many dollars! Get racing speed, lightning acceleration, dynamic power increases from any make automobile! Build fast Stock Cars! California Roadsters! 150 MPH Rods! Get construction drawings! Tuning Techniques! Speed Tricks! Picture Catalogs! Ingenious formulas! Economy secrets! Including—"Racing Frames"—"Reciprocating Masses"—"Jet Engines"—"Braking Characteristics"—"Dynamometers." Also—Dual Pipes—Gears—Fuels—Porting—Relieving—Lowering—Balancing! Includes "California Automobile Customizing"—Glossy photographs! Diagrams! Very new ideas! Conversions! Re-styling! All makes! Streamlined! Chopping! Channeling! Customizing!—Complete—\$1.98 postpaid. Newhouse Automotive Industries, 5805-C2 East Beverly, Los Angeles 22.

"VAPOR-STEAMATIC" Water Injector. Easily built! Finest automatic "Moist-Humidity" system! Engineering triumph—Gets up to ten extra miles per gallon! Tremendously increases horsepower! Eliminates ping, carbon, overheating! Reduces wear—Lengthens engine life! Copyrighted "Water Injection Handbook"—with working drawings covering automobiles, motorcycles, airplanes, tractors! Includes Plans, Catalogues, Diagrams, Instructions—\$1.00 complete. Newhouse Automotive Industries, 5805-C1 East Beverly, Los Angeles 22.

"MIDGET CAR" Book—Complete plans for easily building inexpensive Midget Racers, Two Passenger Highway Runabouts, "Streamlined Roadsters," 3-Wheel Cars, Scooters, etc. Motor Data, Supply sources, 75 Photographs, Blueprint! Instruction Kit! \$1.98—Alquist Engineering, Milford 2, Penna.

NEW CLYMER Books, Catalog of 1949 Automobiles, 120 photos every American car with complete specifications, compares all cars in one book, \$2.00. Ford Owner's Handbook gives complete servicing information all Fords 1932-1949, \$1.50. Complete Service Manual Model "A" Ford \$1.00, Model "T" \$1.50. Life of Ted Horn, three-time American Automobile Racing Champion, \$2.00. Complete Outboard Service Manual covers all makes, \$3.50. Revised Hot Rod Book 1946, 1947, 1948 records, \$1.50. Steam Tractor Engine Album, 160 pages describes, illustrates 105 Historical Steam Vehicles, \$2.50. How to Build Racing Automobile, \$2.00. All postpaid. Specify books wanted. Floyd Clymer, Dept. C-CF, 1268 So. Alvarado, Los Angeles 6, Calif.

CALIFORNIA CUSTOM accessory, head-quarters. Buy direct from original designers and save. Solid hood sides, lowering kits, grille panels, fender skirts, dual pipes, speed equipment, chrome motor accessories. 1949 catalogue now available. 32 illustrated pages, jam-packed with California accessories—25c. Eastern Auto Supply, 3191G South Grand, Los Angeles 7, California.

"SPEED EQUIPMENT" Bargains! "California" Mufflers \$4.50, V-8 Duals \$16.95, Famous Racing Heads \$45.00, Chrome Carb Slacks 98c, Echo Cans \$1.65, Dual Manifolds, \$9.95, OctaGone Water Injectors \$17.50, Gas Savers \$1.50, Lowering Kits \$2.95. Many Others! Illustrated "Speed Catalog" 25c. Dealers Wanted. Alquist Engineering, Milford 2, Penna.

"HOLLYWOOD" DEEPTONE Mufflers. Powerful "straight-thru" design increases efficiency, speed, acceleration, mileage! Singles, all cars \$4.85, V-8 Duals \$16.95—(Satisfaction Guaranteed) Speed equipment catalog 25c. Dealers wanted. Alquist Engineering, Milford 2, Penna.

FROM SPEEDWAY to Roadway! Track-proved Hi-Speed Heads and Manifolds now available for your passenger car! No special tools needed! Increase horsepower 25%! Astonishing Getaway! Free illustrated Catalog. Speedsport, 6215A-C Diversey, Chicago 39, Ill.

BASS-TONED MUFFLERS \$4.00, Stainless Steel \$5.50, Steel Fender Skirts \$10.00, Steel Visors \$6.90, Free Catalog—California Custom Craft, Box 648, Los Angeles 34, Calif.

HOT ROD—the only monthly magazine about building roadsters, streamliners, etc. Sample copy 25c, \$3.00 yearly. Hot Rod, 7164 Melrose, Dept. MI, Hollywood, Calif.

"HOT ROD" Handbook plus "California Speed Manual" and "Racing Equipment" Catalog—All three only \$2.00. Speed Publications, Port Jervis 22, New York.

WORLDS FINEST Automobiles—Foreign—Sports—Custom-Photos \$3.00 Set, Downing, 615 Cleveland, Oakland, Calif.

"WATER INJECTION." Free descriptive, illustrated information. Neher Industries, La Verne 2, Calif.

AUTO SUPPLIES & EQUIPMENT

GANE AERO Jets Save Gas. Sent postpaid for free trial with directions for installing in your car. Pay postman nothing. If not delighted after ten days return them and you owe nothing. Send make car and carburetor today. Advanced Automotive Products Co., 563 Lake Road, Webster 6, N. Y.

AUTOMOTIVE SURPLUS tool specialists!

Pullers, wrenches, socket sets, reamers, other bargains. Nationally advertised merchandise. Free catalogue. Glenco, 7519 Myrtle Avenue, Glendale 27, N. Y.

AUTO PARTS. Buy direct. Get dealers' prices. Represent us in your territory. Write requirements. Specify car make. Mechanics Auto Parts, Factory Warehouse, 3807-MI N. Ashland, Chicago 13.

YOUR FRONT wheel bearings are bone dry. Get Douglas Inside Grease Seals, save money, and be safe. State make of car. \$2.85 a set, factory to you. Represent us in your territory. Weichart Mfg. Co., 237 Natoma St., San Francisco 3, Calif.

RACING CAR equipment for all cars, engines, racing heads, manifolds, carburetors, mufflers, etc. Speed instructions and literature \$1.00—refunded first order. Lee Motorcraft Co., 1412-C Great Northern Bldg., Chicago 4, Ill.

AUTO BELLS: The newest warning signal. Two loud tones. Easily installed. \$8.50. Details free. Write: Bermuda Auto Bells, D-39, 16 Concord St., West Hartford 7, Conn.

CONVERTIBLE TOP Covers. Plastic fabric. All convertibles \$19.50. Snap fasteners. Satisfaction guaranteed. Vassar, Cleveland 5, Ohio.

SAVE GAS! Quicker Starting! "Airflow Needles." \$1.50. Free Trial. Specify Car Carburetor. Neher Industries, La Verne 2, Calif.

TILLOTSON CARBURETORS, parts. Automotive repair parts, wholesale, retail. Free lists. 600 LaPrairie, Ferndale 20, Mich.

"SMITHY MUFFLERS" for all cars. Free list. Buck's Auto Parts, 1625-T, Merced 3, Calif.

1949 SUPERIGNITIONER STARTING, Pep, Mileage \$4.50. Eg Mfg., Elmsford, N. Y.

NEW MIRACLE Chrome Protector. Free information. Turke Industries, Hinsdale 2, Ill.

AUTO TRAILERS

BUILD YOUR own Trailer! Save Money! Have every feature you want! Plans for House, Sport, Camp and Utility Trailers. Catalog describing 9 models 10c (15c in Canada and overseas). Jim Dandy, Box 125-C, Wausau, Wis.

TRAILER PLANS—house, utility, boat, etc. Axles, chassis, hitches, windows, etc. Catalog with booklet, "Trailer Hints," \$1.00. Catalog only, 50c. Marine Mart, Buffalo 7-H, N. Y.

FREE LOWBED Trailer Plan. Airplane Tire Co., Dept. 10, Tulare 2, Calif.

MOTORCYCLES, BICYCLES, MOTOR SCOOTERS

MIDGET CAR 55, motorbike conversions 55, brand new Regal motor scooters \$37.50 less motors, Indian motorcycle \$25, midget car \$20, Custer motor scooter \$25, all complete. Gasoline engines \$2 up. Super-cycles, Cushman's, Salsburys. Plenty new motor scooters, midget cars, home-builders parts, automatic clutches, transmissions, engines, tires, etc., at factory prices. Special sale: Four balloon tires for \$3. Over 5500 tires in stock. Mail order only. Send 25c for Big War-Bargain catalogue just out listing these and hundreds of other bargains. (35c by First Class Mail.) Midget Motors Directory, Athens, Ohio.

NEW 1949 INDIAN and Harley parts and accessory Handbook, 25c. Motor parts, chains, batteries, tires, chrome accessories. Motor rebuilding. Lynn, 1700 East University, Des Moines (16), Iowa.

WHEELS! BUILD wagons, scooters, trailers, mowers, wheelbarrows, Grocery carts, Baby Carts, Play Pens, Baby Carriages, 4" to 16". Free list. Trulsen Mfg. Co., 811 E. 31st, Kansas City, Mo.

CAMS FOR speed and acceleration. Harley's, Triumphs and Indian Vertical twins. \$20.00 and \$30.00. Write for information or send stock cams to David R. Bailey, Box 280, Renair, Calif.

RECONDITIONED MOTORCYCLES and motors. Chromium accessories. Complete stock Indian parts. Expert rebuilding. Fast Service, Indian Motorcycle Sales, Kansas City 1, Mo.

MOTORCYCLE NEWS—Monthly. Worldwide News. Abundantly illustrated. Year's Subscription \$1.00. Sample 15c. Motorcycle News, 5424-C Sawyer, Chicago 25.

MOTORSCOOTERS, NEW design, 6 big features, literature 10c. Rollaway Motors, Lancaster, N. H.

COMPLETE, ONE stop Harley Davidson Sales Service, 813 Ohio, Wichita Falls, Tex.

CHROME THOSE bike parts. Dresden Platers, 2158 Gratiot, Detroit 7, Mich.

ELECTRICITY & ELECTRICAL SUPPLIES

BUY LAMP Parts Wholesale. Parts you need for building, repairing, or assembling. Save money on large or small orders. New catalog for 10c. Gearon Company, Dept. 300-C9, 27 South Desplaines, Chicago, Ill.

LAMP PARTS, fittings, cords, vases, sockets, bases, finials, details 10c. Wrona Lamp Co., I-C, 2012 Corland St., Chicago 47.

LAMP PARTS—Twenty-four hour service from most complete stock. Catalog 10c. Gyro Lamps, 5402-M Clark, Chicago 40.

ELECTRIC PENCIL: Engraves all Metals \$1.00. Beyer Mfg., 10511-G Springfield, Chicago 43.

ELECTRICAL SUPPLIES — catalog 10c. Glacier, 905 N. 28th, Billings, Mont.

MACHINERY, TOOLS & SUPPLIES

ELECTRIC TOOLS at greatly reduced prices. Catalog 10c. Betco, 619 North Broadway, Oklahoma City, Okla.

SHAPERS, KNIVES, Swing Saws, Sanders, Lawnmowers, Trailers. J-M Machine Works, Sylacauga 5, Ala.

WELDING—PLATING—SOLDERING

AUTO RADIATOR Repairing Supplies, equipment, books, gasoline torch. Write: John Curfman, Maryville, Mo.

WELDERS 110V. Welds 1/2" Steel \$32.50. Morris Welding Service, 1850C State, Schenectady 4, N. Y.

FOR INVENTORS

INVENTORS: LEARN how to protect your invention. "Patent Guide" containing detailed information concerning patent protection and procedure together with "Record of Invention" form will be forwarded upon request—without obligation. We are registered to practice before the U. S. Patent Office and prepared to serve you in handling your patent matters. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 93A-G District National Building, Washington, D. C.

INVENTORS—PATENT laws encourage the development of inventions. Our firm is registered to practice before the U. S. Patent Office. Write for further particulars as to patent protection and procedure and "Invention Record" form at once. No obligation. McMorow, Beriman & Davidson, Registered Patent Attorneys, 138-X Victor Building, Washington 1, D. C.

PATENT PROTECTION—Unless an inventor is thoroughly familiar with such matters, he is advised to employ a competent registered Patent Attorney as the value of a patent depends largely upon the skillful preparation of the specification and claims. Send for booklet, "Patent Protection for Inventors," outlining preliminary steps to take to obtain patent protection. Victor J. Evans & Co., 470-K Merlin Building, Washington 6, D. C.

INVENTORS: THE usual First Step is to have a search of the U. S. Patents conducted, so I can report on Patentability. Write without obligation. Patrick D. Beavers (formerly Randolph & Beavers), Registered Patent Atty., 925 Columbian Bldg., Washington (1), D. C.

PATENT SEARCHES \$5.00. Includes nearest patent copies. MX 48 hour service. Free protection forms. Patent Research Engineering, 318 Evans Building, Washington 5, D. C.

PATENT SEARCHES \$5.00. Reports airmailed within 4 days. Invention protection forms free. Write Patent Research Engineering, 318 Evans Building, Washington 5, D. C.

PATENT SEARCHES \$5.00. Reports airmailed within 4 days. Invention protection forms free. Write Miss Ann Hastings, Patent Searcher, P. O. Box 176, Washington 4, D. C.

INVENTORS: INVENTIONS, ideas wanted. Write description. We may accept for sales listing. Invention Exchange, M393 Smith St., Perth Amboy, N. J.

INVENTORS: IF you have an invention for sale, patented or unpatented, write Institute of American Inventors, Dept. 508, 1926 Eye St., N. W., Washington 6, D. C.

INVENTORS. FOR "Record of Invention" form, contact Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

INVENTOR'S GUIDE free on request. F. A. Lederman, Registered Patent Attorney, 154 Nassau St., New York 7, N. Y.

GUARANTEED ACTION. Nation-wide invention sales services. Ellis & Associates, 922 Sitka Street, El Monte, Calif.

INVENTORS' HAVING inventions for sale, Patented or unpatented. Write. Schrieber's, Nashville, Ill.

INVENTIONS WANTED

INVENTORS: HUNDREDS of manufacturers have requested our assistance in locating marketable new products. Complete information, free. Institute of American Inventors, Dept. 50-C, 1926-Eye St., N. W., Washington 6, D. C.

HIGHEST ROYALTIES — Cash. Official U. S. I. R. C. certification. Request free Booklet "L" Universal Marketing Co., 354 South Spring St., Los Angeles 13, Calif.

CASH FOR your idea, 280 manufacturers need inventions, patented or unpatented. List Free. Invention Bureau, 208-X Clinton, Oak Park, Ill.

INVENTIONS PROMOTED. Patented or unpatented. Write Adam Fisher Company, 582 Enright, St. Louis, Mo.

INVENTIONS WANTED. Patented or Pending only. Inventors Exchange-C, Hartford 1, Conn.

MODELS & MODEL SUPPLIES

LANDLOCKED SAILORS! Beautiful, 64 page richly illustrated catalogue of fittings, old time sailing ships, model guns, sailboats and motor boats, authentic in every detail. Only 35c. Halsette Yacht Service, Dept. 1M, Halesite, Long Island, N. Y.

SHIP AND yacht model fittings: blue-prints. Send 25c for illustrated catalog No. 24—listing hundreds of items. A. J. Fisher, 1002-B Etowah Ave., Royal Oak, Mich.

MODEL RAILROAD SUPPLIES

RAILROADERS, 50c GETS new 1949 catalog reference manual. O or HO gauge. Walthers, 255 Erie, Milwaukee 2, Wis.

PATENT ATTORNEYS

INVENTORS: LEARN how to protect your invention. "Patent Guide" containing detailed information concerning patent protection and procedure together with "Record of Invention" form will be forwarded upon request—without obligation. We are registered to practice before the U. S. Patent Office and prepared to serve you in handling your patent matters. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 938-G District National Building, Washington, D. C.

INVENTORS—PATENT laws encourage the development of inventions. Our firm is registered to practice before the U. S. Patent Office. Write for further particulars as to patent protection and procedure and "Invention Record" form at once. No obligation. McMorro, Beriman & Davidson, Registered Patent Attorneys, 138-Y Victor Building, Washington, D. C.

INVENTORS: WHEN you are satisfied that you have invented something of value write me, without obligation, for information as to what steps you should take to secure a Patent. Write Patrick D. Beavers (Formerly Randolph & Beavers), Registered Patent Atty., 924 Columbian Bldg., Washington 1, D. C.

INVENTORS: WITHOUT obligation, write for information explaining the steps you should take to secure a Patent. John N. Randolph, Registered Patent Attorney, 210 Columbian Bldg., Washington 1, D. C.

PATENTS—TRADE Marks. Gustave Miller, Registered Patent Attorney, 99-C Warner Building, Washington 4, D. C. Patent Lawyer.

INVENTORS. FOR "Record of Invention" form, contact Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

C. A. SNOW & CO., 1-427 Snow Bldg., Washington 1, D. C. Registered patent attorneys. Literature mailed on request.

INVENTOR'S GUIDE free on request. Frank Ledermann, Registered Patent Attorney, 154 Nassau St., New York 7, N. Y.

PATENTS

INVENTORS—PATENT laws encourage the development of inventions. Our firm is registered to practice before the U. S. Patent Office. Write for further particulars as to patent protection and procedure and "Invention Record" form at once. No obligation. McMorro, Beriman & Davidson, Registered Patent Attorneys, 138-Z Victor Building, Washington, D. C.

INVENTORS: TEST the Commercial value of your patented or unpatented inventions, quickly and inexpensively. Write for free information. Institute of American Inventors, Dept. 50-A, 1926 Eye St., N. W., Washington 6, D. C.

INVENTIONS PROMOTED. Patented or Unpatented. Write Adam Fisher Company, 582 Enright, St. Louis, Mo.

ARCHERY

BOWS - ARROWS - Quality Archery Equipment. Popular prices. Catalog 10c. Illustrated Archery Instruction Book 50c. Archery, 617-P So. State, Chicago 5.

MALLARD PLANS



Here's a 14 ft. plywood duck boat that's "made to order" for hunting. She's light for car top carrying, plywood planked for strength and dryness, and low enough to make a good blind. Plans show either double-ended or square stern. Plan No. B-143, price \$1.00. Send order and remittance to: Mechanix Illustrated Plans Service, Fawcett Building, Greenwich, Connecticut.

BLUEPRINTS & PLANS

BUILD AN Adobe House. Plans and elevations for the construction of a modern picture-window home built with stabilized adobe brick are now available. The overall dimensions of this ranch-style dwelling, excluding a separate garage and studio, are 44x37 ft. It contains two bedrooms, a kitchen, a living room (10x30 ft.), a dining room and a nine-foot-wide porch that is 44 ft. long. A wood-burning fireplace features a storage bin for wood that's stacked from the outside of the house. Price for plans are \$6.00 per set; additional sets, are \$3.00 when ordered at the same time. Send your money and request to Fawcett Publications, Greenwich, Conn. Please ask for Plan No. 50.

BOATS, OUTBOARD MOTORS

BUILD A better boat than you can buy for the Money. Save 35-55c. Exclusive Laminated-Rib Construction, for longer life under hardest usage, pre-fabricated for easy assembly. All popular types, from simple Car-top models to Mahogany-Decked runabouts, at \$39.50 to \$199.50. Send 10c for literature. Ozarka 499, Borden Lane, Woodstock, Ill.

MARINE SPECIALTIES and motor conversions catalog. Sixty pages of struts, finishes, hardware, plexiglass windshield kits, electric tachometers, inboard and outboard air cooled motors, etc. Immediate delivery. Catalog with booklet, "Conversion Hints," \$1.00. Catalog only, 50c. Marine Mart, Buffalo 7-H, N. Y.

FULL SIZE cut to shape patterns, blueprints, \$3.75 up. Pleasure boats, to 38 feet, illustrated "Build a Boat" catalog, 25c. "How to Build Boats" book \$1.00. Polygou Houseboat Plans, \$10. Marine Catalog \$1.00. Cleveland Boat Blueprint Co., Dept. A-23, Cleveland 13, Ohio.

PACKAGED LUMBER Marine plywood, seasoned oak and cedar, sized, selected. Send \$1.00 for booklet, "Plywood Boats," with quotation form and literature. Forms and literature, 25c. Marine Mart, Buffalo 7-H, N. Y.

STEERING WHEELS, windshield brackets, from \$6.95. Modern fittings at lowest prices. Complete pre-cut plywood boats. Bargains galore. Folder 10c. Marine, Box 681, Mendota, Minn.

HIGH SPEED outboard motor tuning and Souping Up methods. Instructions \$1.25. Excello Marine Sales, Post Office Box 71, Stratford, Conn.

MARINE CONVERSIONS for Ford and Jeep engines. Catalog 10c. Lehman Manufacturing Company, Department C, Newark 2, N. J.

BOAT BUILDERS' Guide—250 pages—15,000 items pictured, priced, delivered. Send \$1.00. MARINE MART, Buffalo 7-H, N. Y.

NEW, USED, rebuilt marine motors. Marine conversions, fittings. FREE catalog. Stokes Marine Supply, Dept. 21, Coldwater, Mich.

BUILD BETTER boats from better plans. Send for free Design Selection Form. Westlawn Associates, Montville 4, N. J.

BOAT PLANS: wood-steel catalog. John B. Clark, yacht designer, 327M Kenmore, Bay Village, Ohio.

BUILD-IT-YOURSELF

OPERATE HOLLYWOOD Overhead Garage Doors from Car. Kit of parts \$12.50. Circular stamp. Dooromatic, 7116 1/2 Ave. E, Houston 11, Texas.

"CONCRETE BLOCK Homes" 32 page booklet on how to build, \$1.00. H. C. Lightfoot, Civil Engineer, Richboro 25, Penna.

SIMPLE HOUSE plan mailed free. Arthur Gales Co., Racine, Wis.

HAND-MADE NOVELTIES

MAKE YOUR own jewelry! All types of findings, plastic and metal; cameos, beads, shellkits, illustrated catalog 20c. Hobby Art, Dept. 2, P. O. B. 276, New York 18, N. Y.

HOME CRAFTSMEN

GLASY-CAST, THE Liquid Plastic that works the quick and easy way. Cold-Set, 15 to 30 minutes for finished product. Free Samples and Instructions. Make emblems, novelties, plastic frames, machine parts, etc., for real profits. Two lbs. for \$2.95. Elasto-Mold: Flexible production molds made in 20 minutes. Also finest quality Rubber Latex. Wholesale Prices. Plastic Service, 294 Washington St., Dept. L-4, Boston 8, Mass.

28 LAWN ORNAMENT patterns 25c. Other patterns: 15"-20" high; Dutch girl; Dutch boy, pirate, bull terrier, Mexican girl, Mexican boy, dwarf, penguin, flower girl, 10c each; 3 for 25c. 25 novelty patterns 30c. All 62 full size patterns \$1.00 postpaid. Strother, Box 128-PE, Belington, W. Va.

HOBBYIST: ARE your tools and space limited? Try our new kits. Make book ends, lamps, jewel boxes, etc. Materials roughed out, full directions. Send 10c for illustrations and price list. Jerry's Kitchen Table Hobby Kits, P. O. Box 1242, Boston 4, Mass.

DECORATE HOME projects with decals at cost of 1/2c each. Make them yourself in colors or black and white. Also makes fine negatives. Instructions \$1.00. Bluebird Novelty Mfg., Dept. M, Osceola, Ind.

LEATHERCRAFTERS! COMPLETE stocks of leathers, tools, supplies. Metal tooling supplies. Immediate shipment. Free catalog. Kit Kraft, 7377 Melrose Ave., Hollywood 46, Calif.

CRAFT CATALOGUE free, Artcraft's "Little Giant" 6500 items covering several crafts. "Toys" in our field. Artcraft Leather, Oakland 7, Calif.

16 NEW LAWN chairs, 22 tables, benches, trellises, etc. All 38 plans, with full size patterns, \$1.00. Mastercraft 9X3, 7041 Olcott, Chicago 31, Ill.

CHILDREN'S FURNITURE, toys, unfinished, knockdown. Special orders accepted. Free circular. Woodcraft Co., 1017 Nelson, Webb City, Mo.

KNOCKDOWN CEDAR chests. Green and dry cedar lumber. Write today. Craftsman Cedar Works, 200 W. Maple St., Fayetteville, Tenn.

SWISS MUSICAL Church Kit Complete Parts with Music \$3.50. Pilzreiter Imports, Wood-Ridge, N. J.

KNOCKDOWN CEDAR chest also lumber and veneers. Giles, Kendall Company, Brownsboro, Ala.

BUILD PRINTING Press. Profitable Hobby, Literature Free. Olancom, Box 114E, Akron 5, Ohio.

8 BEAUTIFUL FULL-SIZE Whatnot Patterns only 25c. Joannes, P. O. Box 141-C, Omaha 7, Neb.

BLACK HILLS Petrified Wood Sample \$1.10 postpaid. George Kazmer, Hot Springs, So. Dak.

PLASTICS

NEW FLEXCRAFT flexible plastics ideal for home craftsman and small commercial shop. Coat and cast in brilliant colors. Make flexible molds. Introductory kits; Flexible plastic \$1.00; Flexible mold \$1.00; Free Literature. Rad Laboratories, Dept. F., Box 605, Lynbrook, N. Y.

LUCITE, PLEXIGLAS. Any size sheets, masked. Square foot (12x12) cost, 1/16, 96c; 1/2, \$1.25; 3/16, \$1.52; 1/4, \$1.80. Colors add 10%. Include 10% postage. Almac Plastics, 230 Fifth Avenue, New York 1, N. Y.

LUMINOUS PLASTIC House Numbers, Attractive Glow, Practical, Durable, Plus Extra Useful Gift. Postpaid \$1.00. Bob's Luminescent Shop, 317 East "A," Ontario, Calif.

FLEXIBLE MOLD Makers Handbook. Be an expert. Send only \$1.00 for your postpaid copy today. Multi-Mold Prod., 265 W. 30 St., New York 1.

RHINESTONES, PEARLS, Cameos, Sequins, Beads, Settings, Jewelry Findings. Catalog Free. J. & M. Novelties, Box 444M, Griffith, Ind.

INTERNAL CARVED roses, orchids, swans, goldfish, butterflies, etc. Jewelry and gifts. Crystal Floral Novelty Co., Bound Brook, N. J.

PLASTIC, SHEETS, rods, tubes, etc. Free list. Plastic Supply Co., 2901 N. Grand Blvd., St. Louis 7, Mo.

PLASTIC, PLASTER, etc., professionally bright plated. Philip Stein, Oswego, Ill.

SPORTING GOODS, FISHING TACKLE, GUNS

FISHERMEN SEND for the Breemes easy casting float. Deep or shallow water. No adjustments to make. Sent postpaid for \$1.25. Bert Breemes, Jr., Palmyra, N. Y.

"SHOTGUNS," "RIFLES," "Handarms," "Ammunition," "Rods," "Reels." List 10c. M. I. Rudolph's, Atchison, Kan.

5000 BARGAINS, FIREARMS, binoculars, war relics. Catalog 40c. Smith Armory, Runnemed, N. J.

SEND 10c FOR list 100 used guns. Frayseth's, Willmar, Minn.

FIELDGLASSES, TELESCOPES, MICROSCOPES, ETC.

TELESCOPE PLANS are available for building M's Six-inch Portable Reflecting Telescope. A superb astronomical instrument that will reveal the moons of Jupiter, the rings of Saturn and the polar caps of Mars. With it, you can read a newspaper headline at a mile. The plans are complete with photographs, drawings and detailed text. If you can fix a leaking faucet, you can build this telescope. Send your request and remittance of \$2.00 to M.I. Reader Plan Service, 10 Fawcett Place, Greenwich, Conn. Please ask for Plan P-6.

TERRIFIC BARGAINS—Government Surplus Telescopes, Binoculars. Send \$1.00 for 10 piece Hobbyist Lens Set. Contains magnifying and reducing lenses. Send stamp for Bargain list. R. Jaegers, 93-08 95th Ave., Ozone Park 16, N. Y.

WAR SURPLUS Bargains, Binoculars, Telescopes, Sextants, Millions of Lenses, Prisms, Reticles, Eyepieces, Objectives, etc. Request Free Catalog CB. Edmund Salvage Co., Audubon, N. J.

STINSON 150 PLANS



For either scale or beauty this rubber powered replica of the famous light-plane is hard to beat. Sturdy construction and good aerodynamic proportions, make this model ideal for scale flying competition. Full size, easy-to-understand plans contain perspective views, photos and detailed instructions. Plan No. 368, price 50 cents. Send order and remittance to: Mechanix Illustrated Plans Service, Fawcett Building, Greenwich, Connecticut.

REFLECTING TELESCOPES, 60X completely assembled \$25.00. Guaranteed observatory clearness. Free information. Skyscope, 475 Fifth Avenue, New York 17.

ASTRONOMICAL TELESCOPES, binoculars, microscopes; bought, sold, repaired. Books. Lists 10c. Rasmussen-Kece, Amsterdam, N. Y.

TELESCOPES, BINOCULARS, Microscopes—big bargain catalog free. Brownscope Company, 24 West 45th Street, New York.

DOGS, SMALL ANIMALS, OTHER PETS

OZARK HOUNDS Straight cooners \$125, combination cooners \$75. Fox and Deer hounds, males \$50, females \$40. Rabbit hounds and Squirrel dogs. I'm ex-Agent Telegrapher for Frisco Railroad here in the Ozarks. Can get any kind of hunting dog you want. D. L. Rogers, Wyandotte, Okla.

HAMSTERS 1/2 PRICE excellent specimens make good pets, fine for experiments. Males only \$1.50; Females \$2.00; give nearest express office. J&K Hamstery, 474 Peck Drive, Beverly Hills, Calif.

HOBBY CATALOG 10c. Reptile Bulletin 5c. Hamsters \$2.75 pair. Mice \$3.50 dozen. Chameleon 35c. Alligator \$2.50. Quivira Specialties, Topeka, Kans.

FOR HAMSTERS, Cages, Supplies, Information, read American Hamster Pet Journal, 1326 Robert Lee, Mobile, Ala. \$1.00 yearly.

BEAUTIFUL GOLDEN Great Danes—Companion, Guard, Sidney Baucom, 36 W. 1st N., Salt Lake City, Utah.

SEE GOLDEN Hamsters ad on page 32. Shows picture of Hamster.

DAIRY GOATS

CASH FROM spare time! Raise Dairy Goats. Magazine tells how. Send for Free copy. Dairy Goat Journal, Columbia 26A, Mo.

HORSE TRAINING

"HOW TO Break And Train Horses"—A book every farmer and horseman should have. It is free, no obligation. Simply address, Beery School of Horsemanship, Dept. 1159C, Pleasant Hill, Ohio.

RABBITS

RAISE CHINCHILLA rabbits. Year-round money-makers from furs, meat, breeders. Experience unnecessary. Write today. Willow Farm, Sellersville 48, Penna.

RABBITS. FOR tasty food and profits, write for information and Free illustrated booklet. Dr. Frank Baddour, Lebanon 7, Tenn.

\$400.00 MONTHLY, RAISING Angora Rabbits, Particulars free. White's Rabbitry, Newark, Ohio.

RAISE GUINEA Pigs. Make money at home. Booklet free. Taylor, Box 426E, Hapeville, Ga.

\$50 WEEKLY OUR plan raising Angora rabbits. Wilson, Stanton, Calif.

REAL ESTATE, FARM LANDS

FLORIDA CAMPSITES—\$75.00 at \$5.00 monthly buys nice, high dry lot in lake county (World's Best Bass Fishing) near Ocala National Forest. St. John's River, Beautiful Lakes, Pavement, Electricity. Safe from Bombs. Send \$1.00 quick, without further obligation, for photos, Plat and option contract. Winston Vernor, De Land, Fla.

SOLD FOR Taxes. Calif., Oregon, Washington timber, grazing, ranch & Mining lands. 25c to \$3 acre min. bid. 10c (coin) brings circulars, photos, maps. Pacific Lands, Box 2350-MI, Hollywood, Calif.

PERSONAL

"HOW CAN I Find Out?" You can! Information discreetly developed. Any matter, personal problem, anywhere. Worldwide. Officially licensed, bonded service. Established 1922. Reasonable. Confidential. William Herman, 170 Broadway, New York.

LEATHER BELTS for men, genuine cowhide or cowhide alligator top grain bridle, brass buckle. Widths from 1/4 inch to 1"—\$1.25, from 1 1/4" to 2"—\$1.50. State size and color. No C.O.D. Jaycee Leather, c/o Emil, 81 Dumont Ave., Brooklyn 12, N. Y.

DON'T THROW away—swap! Used, outgrown, disliked? Clothes, toys, books, magazines, recordings, etc. Send descriptive list your haves, wants. Enclose only 5c each item. Nationwide Mailorder Swapshop, Box 3483, San Francisco.

"INTERESTING MAILS" with useful "Free" gift. One month listing 25c; Three months 50c; Six months \$1.00. Bents, Jr., Chatawa 90, Miss.

RECEIVE MAGAZINES, Mail Samples. From everywhere, everyday. Name listed 10c. Sibley, Mendon, Mass.

MAIL FROM Everywhere. Listing 10c, 3 months 25c. Halley 11037-A, Estepa Drive, Oakland, 3, Calif.

MEN SEND \$2.00 for 4 new ties that are worth \$6.00. Lowell G. Hartman, Box 182, Nappanee, Ind.

NO MAIL? Fetch weekly group letter. First one 25c. Reclutter, 1008 N. Olive, Santa Ana, Calif.

LETTERS RECEIVED, Remailed, 25c. Confidential Service, 11037-A, Estepa Drive, Oakland, 3, Calif.

QUESTIONS ANSWERED on any subject—50c each. Alfonso Tillipaw, 1222 Paulina, Chicago 22.

CIGARETTE LIGHTERS repaired and guaranteed. Dresden, 2148 Gratiot, Detroit 7, Mich.

JEWELRY

BEAUTIFUL AGATE Lavalliers (wholesale only). Six for \$22.75. Swenson's Agate Shop, 5114 Southeast 39th Ave., Portland 2, Ore.

JEWELRY MAKING. Illustrated catalog 10c. George Sassen, 154 Nassau Street, N. Y. C. 7.

RHINESTONE JEWELRY Supplies. Free catalogue. Wright's, Box 104-M, Erie, Penna.

MINERALS—PRECIOUS STONES

URANIUM EXPLORATION, detection, recognition methods understandably explained. Particulars free. Woodwind Industries, 5217-C Hollywood Boulevard, Hollywood 27, California.

ZIRCONS, DIAMOND-LIKE, 1/2 carat plus 2 crystal clear sparkling zircon side stones \$2.00. Others. Catalog 10c. Im-hubery, Box 232, White Plains, N. Y.

GEMSTONES, MINERAL Specimens. Every variety. Lowest prices. Postcard brings free list. Plummer, 2177A Bacon, San Diego 7, Calif.

LARGE URANIUM ore specimens, quaranteed radio-active. Postpaid \$1.00 U.S.A. only. Miner, Box 77, Placerville, Colo.

URANIUM PROSPECTOR'S Handbook \$1. Craft Publications, Dept. Z, 601 S. Vermont, Los Angeles 5, Calif.

"GENUINE" DEEP Red Arizona Rubies (Garnets). Send quarter for packet. Bitner's, Box 2651, Phoenix, Ariz.

"ROCKS" WANTED. Write for List. Science, C2770 Dale, St. Paul 8, Minn.

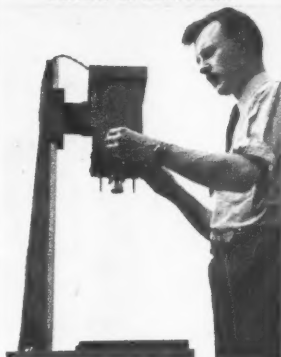
MISCELLANEOUS

GEIGER COUNTERS! New 5 lb. ultra sensitive uranium detector complete with meter, headset and count indicator. Sensational low price! Guaranteed. Detector Company, 5637 Cahuenga Blvd., North Hollywood, Calif.

MAGAZINE DIRECTORY listing 4364 U. S. Business, Vocational and Diver-sion periodicals. Third Edition. \$1.50 postpaid. Commercial Engraving Publish-ing Co., 34W North Ritter, Indianapolis 19, Ind.

TREASURE LOCATORS, Mineral Detec-tors. Geiger Counters for Uranium ores. Free literature. Fisher Research Laboratory, Inc., Palo Alto, Calif.

35MM ENLARGER



An MI project of special interest to the minifan. This particular enlarger was built around a Leica though any other miniature can be used just as well. The drawings show very plainly all the parts needed to make this ver-satile little job. It features an arrange-ment that permits the film to be advanced without any chance of your favorite negatives being scratched as the condenser is lifted out of the way to advance the film. When lowered, the weight of the condenser serves to keep the film perfectly flat and in the focal plane. Blueprints and descriptive text are available from the MI Reader Plan Service, Fawcett Building, Green-wich, Conn., for 50c. Ask for Plan No. P-4.

LOST GOLD—Supposed locations and stories on five lost gold mines and claims, \$1.00. R. A. Schock, 1231 Stophlet, Ft. Wayne, Ind.

RECEIVE GIGANTIC mails, listing 10c, three months 25c, twelve months 50c. Waddell's Directory, 341-D East 76th, New York 21.

RECEIVE MAILS, magazines, samples. Your name in numerous mailing lists 10c. Greenwood, 273 Broadway, New York 7.

WE PURCHASE Indianhead pennies. Complete allcoin catalogue 10c. Fair-view, 277 Broadway, New York 7.

AUTOMATIC SHOE Shiners. Route op-eration. Be first! Vassar, Cleveland 5, Ohio.

USEFUL ITEM, price list, 10c. Mail Order Dime Store, Coyle 3, Okla.

OLD GOLD WANTED

HIGHEST CASH for old, broken jewelry, gold teeth, watches, silverware, dia-monds, spectacles. Free information. Sat-isfaction guaranteed. Government li-censed. Rose Smelting Company, 29-K, East Madison, Chicago.

WANTED BROKEN jewelry, all kinds watches, rings, gold teeth, silverware, platinum. Satisfaction or articles re-turned. A. Pojeskey, Mt. Carmel, Pa.

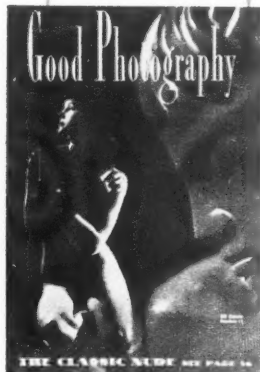
WANTED MISCELLANEOUS

IF YOU want to swap—buy—sell any-thing, write Swappers' Guide, Box 415, Evansville, Ind.

WATCHES, WATCHMAKING, ETC.

WATCHMAKERS TOOLS, Supplies. Sold —Bought. Catalogue! Bengall Com-pany, Culver City, Calif.

THE BOOK YOU HAVE BEEN WAITING FOR



A FAWCETT PUBLICATION

An all new edition, the eleventh, of this long sought-for book is now on sale.

Here is a partial list of the contents:

- getting "atmosphere" in your pictures
- cats and dogs
- trees—make the picture
- telltale picture signs
- silhouettes
- the bridge and the photographer
- the classic nude
- one model many moods
- indoor pictures with outdoor light
- photography after sundown
- plus a 58-page salon section

This is the Life!



If you'd like good times without end . . . if you prefer your fun spiced with thrills and adventure . . . if you want pals who enjoy the things you do . . . if the lure of the winding road is in your blood . . . go motorcycling! Swing into the saddle of a Harley-Davidson Hydra-Glide and really start living! Wait until you feel that surge of power under you, smooth, quiet, but lifting you over steepest hills like a breeze . . . purring gently as you loaf along under tree-shaded lanes . . . whistling like a jet plane as you "level off" for the straight-aways . . . floating you cloud-like over roughest roads and bringing you home again fresh as a daisy! Man! There's no sport like motorcycling, no fun like owning a Harley-Davidson! And it's so easy to get started . . . to begin riding *today!* See your Harley-Davidson dealer; mail the coupon now!



HARLEY-DAVIDSON MOTOR COMPANY,
Dept. M1, Milwaukee 1, Wisconsin

Send *free* copy of ENTHUSIAST Magazine filled with motorcycle action pictures and stories; also literature on latest models.

Name.....

Street or R.F.D.....

City..... State.....

**INTERNATIONAL
EXPOSITION
OF NEW
INVENTIONS
JUNE 4-11**



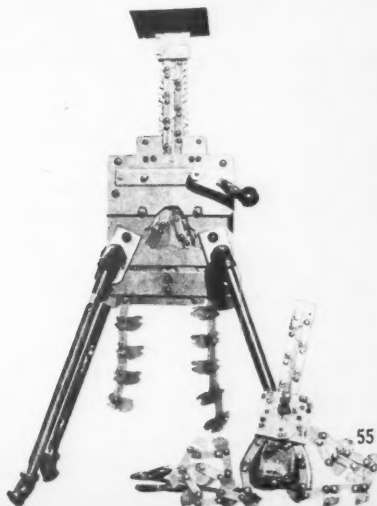
Human-like machine, below, is not a robot but a zipper-like, up-and-down hoist which can be applied to ladders and scaffolds. Inventor Yaichi Hayakawa displayed it at the Exposition, above.

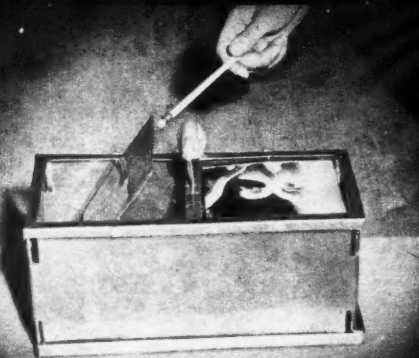
GADGETS Can Make Your FORTUNE

By West Peterson

THIRTY-FIVE thousand inventions will be patented in the United States this year. If one of them is yours—possibly a simple gadget with universal appeal—you may reap a fortune!

Anything from a new household appliance to an improved method of food





Mouse mirror attracts the rodents to their own image in this better mousetrap invented by David Tabin. They step on the trap door and meet their fate.

"Step on the air!" says Joseph Berger, inventor of this Bergermobile—a car which runs on compressed air and recharges itself.



Elevator-stairladder, invented by Morris Honig, features a private room in which blaze victims ride safely to earth.



You can study the universe with E. Ernest Oberst's Telescope, a home planetarium. Stars glow in true position against dark dome.

Snap-On shoes keep the ladies stylish. Invented by Jennie Laufbahn, you can attach ten different tops to each bottom. Even the heels snap off.



Perco-drip for coffee connoisseurs combines the best in drip and percolated coffees, claims Carl Holzwarth who showed it at the Inventors' Exposition.





processing, from a unique use of plastics to another member of the wonder drug family can pay off huge dividends to the lucky—and skillful—discoverer. While it's true that many inventions are now made by research teams in well-equipped laboratories, there's still plenty of opportunity for the scientific or gadget-minded individual.

Take, for instance, the case of Ataulh Durrani, who developed one of the newest products on grocery store shelves—"Minute Rice."

Durrani, a native of Afghanistan who studied chemistry in Europe, came to America with the idea of doing petroleum research. Unable to find a job in this field, he got into the importing business. At a dinner party one night, a canning company executive learned of his frustrated research ambitions and suggested that he go to work on rice.

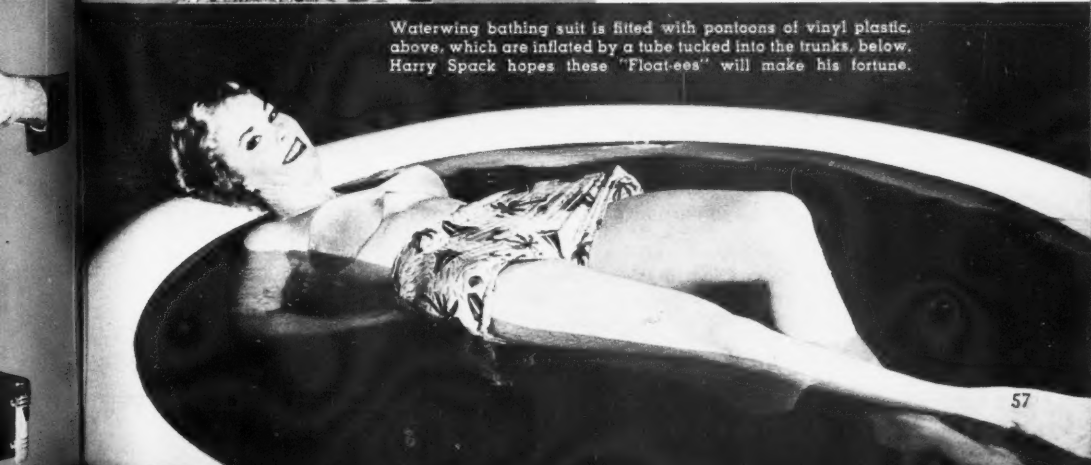
"The raw material is cheap," the executive pointed out, "you don't need the expensive equipment required in petroleum experiments, and there are plenty of problems to be overcome."

Though rice was a low-cost and valuable food, the executive explained, it was troublesome to keep and to prepare. The oil in the grain tended to turn it rancid, and it attracted vermin. Cooking it was a complicated process—one for which few American housewives had sufficient patience. Perhaps some method of canning rice might be the answer.

The project sounded feasible to Durrani. He went to work on it and finally came up with a quick-cooking rice formula that looked promising. Since the end product was dry, it didn't require canning. In 1940 he went to Stuttgart, Ark., and got the Arkansas Rice Growers' Cooperative Association interested in the method. The Association set [Continued on page 162]



Waterwing bathing suit is fitted with pontoons of vinyl plastic, above, which are inflated by a tube tucked into the trunks, below. Harry Spack hopes these "Float-ees" will make his fortune.



I Psychoanalyze Ghosts



By Nandor Fodor, LL.D.

author of *The Search For The Beloved* *

"You may be a ghost yourself," says this former Director of Research, International Institute for Psychical Research. Here's his own story of weird probing into the unbelievable realm of some supernatural disturbances.

LESSONS were going smoothly at the Wild Plum (N.D.) schoolhouse when suddenly the pail of coal near the stove began to stir restlessly—all by itself!

Mrs. Pauline Rebel, the teacher, and her eight pupils were even more amazed when lumps of coal started popping out of the pail, striking the walls and bounding back into the room. Window shades started smouldering and a dictionary began to move by itself.

"Ghosts!" one of the children screamed and they all rushed madly for the door.

Later, after a careful investigation, the state fire marshal admitted he could not solve the mystery. He analyzed the coal, examined the pail and studied the dictionary. Nothing was wrong with them. People at Wild Plum still wonder and whisper about the schoolhouse ghosts.

Do I have the explanation? With careful study I feel I could have solved that mystery. In my opinion, the investigation should have centered about the children. Youngsters love to dream about the school burning down, possibly even with the

teachers inside. But it takes a ghost to act that dream out! I think that one of the pupils was probably harboring a ghost within him—one that performed his unconscious desires.

Does that seem fantastic to you? At one time it would have seemed so to me too. But, then I became Director of Research for the International Institute for Psychical Research in London. Part of my work was to check strange supernatural disturbances and try to discover their meaning. Through that work it became clear to me that noisy cut-up ghosts may be a force derived from within *you!*

Incredible as it may seem, *you* may be a ghost. In some as yet unknown manner, a part of you may refuse to be confined within your body. It may perform your unconscious desires even though you think you have nothing to do with it. When this happens, you have a Poltergeist—the German word for the noisy type of ghost who creates a madhouse where vases lift themselves, doors slam and plates crash against walls.

Mrs. X was absolutely terrorized by ghostly manifestations. As the Institute investigator stared, glasses, lamps and chairs flew into the air by themselves and doors slammed shut mysteriously.





Here's Mrs. X, the Thornton Heath Poltergeist, wearing the ancient Turkish necklace she "apported."

Lajos Pap in trance, center, pulls a basket out of "thin air" during one of his psychic seances.



Usually it occurs in adolescents, but sometimes it takes place in mentally disturbed adults as well. But you can be sure that where Poltergeists are on the rampage, somebody is sick.

Often, supposed Poltergeists are caught in the act of perpetrating a fraud. Then, scientists are apt to say "I told you so" and ridicule the whole phenomenon. But it must be remembered that when you deal with Poltergeists you deal with unbalanced personalities. Once notoriety has been secured for the person around whom the disturbances occur, he is tempted to fake the manifestations after they have stopped in order to hold the center of the stage.

My most amazing experience with this type of phenomenon was the Thornton Heath Poltergeist in 1938. In the spring of that year, bedlam broke loose in the home of a house painter near London.

GHOST WRECKS HOME, FAMILY TERRORIZED. That's what the headline said. Stories told of glasses exploding, objects sailing through the air and sometimes through closed doors.

I sent my assistant at the Institute to check up. He reported that the wife, whom I shall call Mrs. X, seemed to be the cause of the disturbances. Her reactions were of absolute terror. Her pulse rate went up to 120 and her whole body trembled at each manifestation of the Poltergeist. My assistant saw glasses fly up and explode in the air and felt sure it was a case for the Institute to handle.

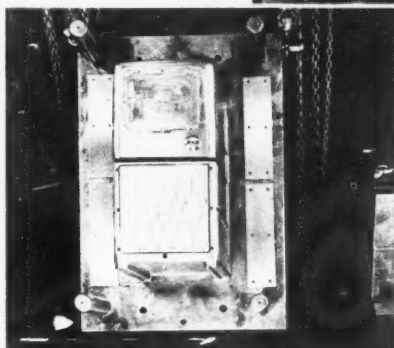
Intrigued, I visited the scene of these miracles myself and saw enough to warrant a full investigation. But first, I checked into the woman's background.

Eight years before, during a game of cards at her home, she fell into an unnatural sleep. She dreamed that her dead father drew a cross on her left breast with his finger and when she woke up there was blood oozing from her breast. And the mark of the cross was there! An examination at a local hospital disclosed a columnar-celled carcinoma under the cross and it was removed by operation.

Once, when she was ill in bed, her husband also took sick. After three days of joint confinement, glasses started to smash themselves on her husband's side of the bed. Feathers flew out of his pillow and icy blasts struck him in the face. These phenomena have never been explained.

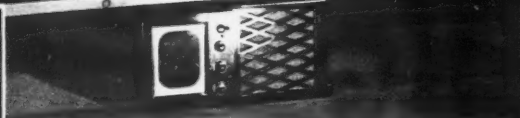
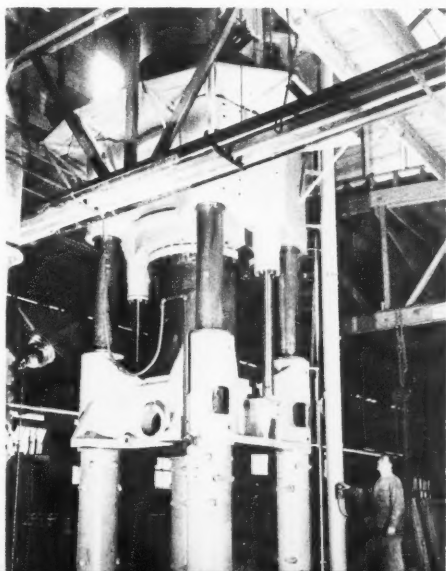
In our experiments at the International Institute for Psychical Research, Mrs. X turned out to be an "apport" specialist. The word comes from the French word "apporter" meaning to bring. It's a spiritualistic term for the [Continued on page 149]

Largest Plastic Mold



Lower part of the first 4000-lb block, like one above, cracked under stress before mold's assembly.

Big Joe, as giant press has been nicknamed, was once a munitions press, took a year to convert.



The world's largest single-piece pressure-molded plastic, a 35-lb TV cabinet for Admiral, is showing its strength by supporting a 1200-lb load.

A cabinet is being removed from the 2000-ton press, below, at Molded Products Corp. Siragusa, firm's president, gambled \$250,000 on the project.



By NICK D. COLLAER

Chief, Border Patrol Section, Immigration
and Naturalization Service of the
U. S. Department of Justice
as told to

JAMES NEVIN MILLER

10,000 MILES OF TROUBLE

Here's the Border Patrol Chief's own story of
our constant fight to keep smugglers of aliens
from sneaking in with their human cargoes.

SMUGGLING aliens across our 10,000 miles of boundaries has become a big time enterprise!

Some of the crooks engaged in this illegal traffic are netting juicy fees for helping foreigners crash our gates—up to \$1000 apiece for Mexicans, \$1500 for Chinese and as much as \$1600 for Central Europeans and Hindus.

The Border Patrol of your Immigration and Naturalization Service is confronted with an unprecedented situation in American history, especially along the 2000-mile Mexican border. There, 4600 foreigners, many of them of the most undesirable type, were caught by the San Antonio District officers in a recent two-day period!

These alien-smugglers are really wily. Take the case of Joseph McCullough who

crossed the Mexican border at least twice a week and always had a big hunk of folding money. He gave every evidence of being an "alien-sneaker" at large, but all efforts to pin him down had proven futile over a period of time.

One day, McCullough loudly announced in the presence of Los Angeles District patrolmen that he was going to "keep his nose clean." To prove his point, he bought a

1. Airplane-jeep team goes to work. The plane's job is to spot the aliens and the jeep's to nab them and cart them to headquarters. 2. Even the trees along the Rio Grande have eyes. Here a Patrolman spies on the smugglers from his high vantage point. 3. Not as high, though, as this 100-foot observation tower, one of 12 located at strategic points along the Mexican border. Men on duty crawl up to posts through the tube in order to avoid being seen.





In sordid bars like this, many smuggling jobs have been plotted. "Drunkard" at left could be a Border Patrol informer.

handsome house trailer, complete with kitchen and bedroom and took under his sponsorship a pretty widow with her three-year old child.

From then on, McCullough often was seen crossing the border on "pleasure trips." Meantime, reports from the north said that groups of six or more Hindus were arriving there from time to time with no legal entry papers. Of course, the officers

examined every vehicle; five or six times they stopped the trailer but found nothing.

There was one crossing, however, when the picture changed a bit. A friend of McCullough's was driving and an inspector got a sudden inspiration to measure the entire trailer. He found an 18-inch difference between the inside and outside sections. So, he snooped a bit farther and finally a coat hanger gave way and a cup-





Desert surrender: a patrol plane spotted two Mexican aliens and radioed their location to the jeep team which finally tracked them down just west of El Paso, inside the United States border.



Small groups of illegal immigrants are rounded up at a central point to await deportation proceedings. Patrol does its most effective work in wee hours which smugglers seem to prefer.

board swung down. There, in a secret compartment, stood six Hindus.

McCullough wasn't anywhere around. But later it was learned that he had driven ahead in his own car a couple of hours earlier in order to "run the road" for officers. He escaped apprehension for a year but his friend and the widow were jailed and given stiff fines.

Look at a topographical map, excluding only that section between Seattle and Los Angeles. The Border Patrol is spread over 10 major districts covering these areas—six on the Canadian border, three on the Mexican and one covering the southeastern section of the United States, including Florida and the Gulf coast.

Fourteen hundred young officers, carefully selected and trained, stand guard every hour of every day. Operating with aircraft, jeeps, crash boats and even horses, they caught 27,691 undesirable aliens during the last five months of 1948—a rate 45 per cent higher than in 1947. In the same period, the number of smugglers of aliens who were arrested was 270—an increase of 68 per cent. So you see, our business has been looking up.

Ever hear of human coyotes? American officials just across the border from Juarez report a big increase in the activities of this particularly cunning type of alien-smuggler. They prey on the poor and ignorant. These coyotes [Continued on page 152]



These simple parts make up a jack of all trades that's also master of 'em all. It's the Coffing hoist-jack—the tool with new ideas.

Jack of All Trades



This jack-puller-hoist is practically the equivalent of a hired hand. Here it's being used in the garage to hoist the engine out of the car.



Equipped with a hoist-dump attachment, this do-all jack prepares your dump wagons for use anywhere—in fields, barnyards or buildings.



With a minimum of adjustment, the handy gadget can be utilized as an ordinary high-lift jack. It's made by the Coffing Hoist Co., Danville, Ill.



It makes an easy job of re-spacing wheels from plowing to cultivating position. The puller will take tractor wheels in, out or off in ten minutes.

for carefree motoring

CHAMPION
SPARK

Three-Dimensional

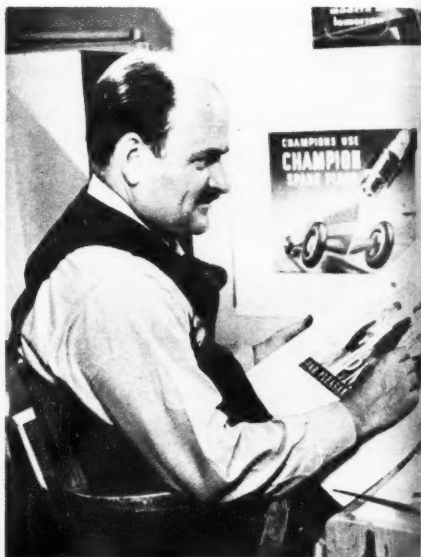


Four-foot sparkplug is hoisted into place in new "3-D" Champion sign. It'll flash on and off like the real thing when it's installed.



Here's Charles McArthur, the man who's responsible for an entirely novel idea in display advertising—"signs that live."

By Roland Cueva



Two of McArthur's brains, above, discuss sketch to be transformed into a sign. They're Harold Tannar, left, and co-brain Santo Vitale.

Prize winner: United States Rubber ad, left, won the Art Directors' Club annual award for the best display advertisement of the year.

Walt Disney train gets sprayed with paint, right, before being placed in ad. The three-dimensional miniature is flat on one side.

Mechanix Illustrated

Showman

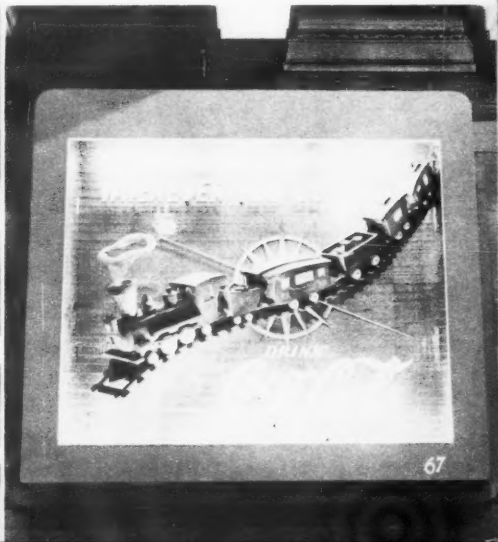
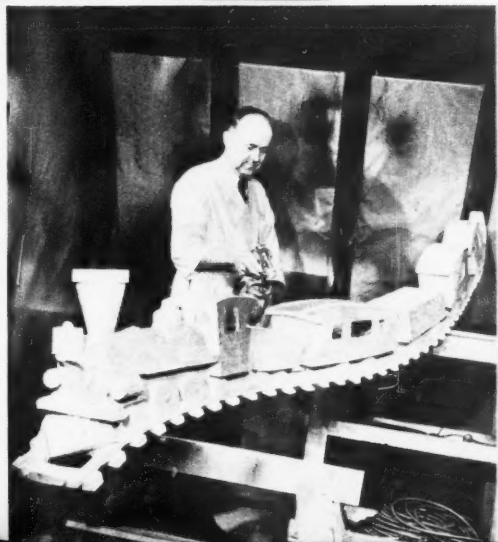
Sculptors model full-sized sign in clay which they'll later cast in plaster. They're guided by the enlarged sketches on both sides.



IN New York's Grand Central Terminal a good-looking, gray-haired man stared intently at a big advertising sign on the station wall. The bright-colored sign was not flat like a poster, but had three-dimensional depth and was set in a frame like a marionette show.

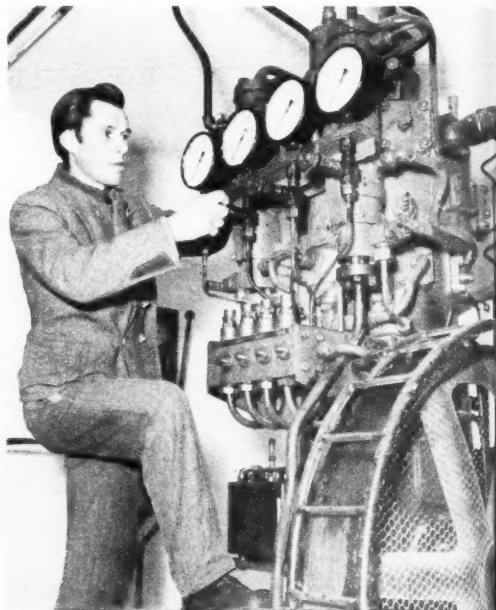
A crowd soon surrounded the ad gazer and began gapping at the sign, too. The man listened to their exclamations and comments with interest, for he was engaged in his favorite pastime—studying his own signs and getting the public reaction to them first-hand.

The name of the ad-gazing adman is Charles H. McArthur, a 59-year-old native of Chicago. He has created what he firmly believes is the first really original advertising medium since the invention of the radio. His belief in his own brainchild is borne out by the phenomenal success of the new signs. In less than two years his three-dimensional displays have made a million-dollar hit by virtually turning big, dreary depots into colorful art galleries. He's getting ready now to put his show on the road. Soon his novel 3-D's will be brightening up not only the ads but also the weary traveler in every railroad station in the country. •



Auto Fuel From Cow Manure

Germans are being forced to search everywhere for new sources of power—even in their own pastures.



Manure piles, above left, take on new importance in Germany. Manure of two cows can heat a farmhouse.

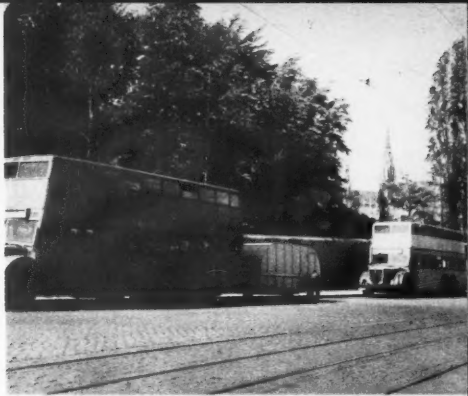
Methane compressor, above, is used to fill metal flasks with gas produced by Harnisch's Bio-Gas Generator.

Cow-power motorist, left, gets a tankful of manure-gas at one of the outdoor filling stations which dot towns.



Lightweight gas bag on cyclist's back provides him with cheap source of power. But not only is it inexpensive — more important, it's available!

Three-wheeled German delivery truck utilizes a huge methane bag on its roof so that it can put in a full day of work without any refueling.



Street scene in Munich: city buses have methane trailers attached which don't hinder efficiency. They're almost big enough to carry the cow, though.

Rotary tiller is powered by manure gas dispensed from a bag on the farmhand's back. This type of power turns the farm into a self-sufficient unit.



By Heinrich Hauser

THERE'S an old European proverb which says you can measure the extent of a farmer's prosperity by the height of his manure pile. That saying is closer to the truth today in Germany than it has ever been before.

A German inventor named Harnisch has developed a simple device which converts manure into fuel. And this fuel is used to drive autos and tractors as well as provide household power.

The idea of using manure as fuel is not a new one. Cow manure has been used for this purpose for thousands of years in India and Africa. As recently as 1912, many cities were operating gas lanterns on sewage gas.

This new Bio-Gas Generator is essentially a septic tank but with two additions.

One is a manure shredder through which the crude manure passes. The second is a heater which accelerates the fermentation of the manure. The heater is powered by the gas but uses only about one per cent of it.

The gas generated from the manure contains from 60 to 80 per cent methane, a fuel of higher caloric value than gasoline. The remainder is carbon dioxide which is filtered out in the processing. The methane is piped directly into appliances like stoves. Or, when used for tractors or autos, it is compressed into steel flasks.

The generator delivers ready-to-use methane within 12 hours after its charge. Manure of one cow provides enough methane for average cooking needs—two to three cubic yards. [Continued on page 150]

COVER STORY



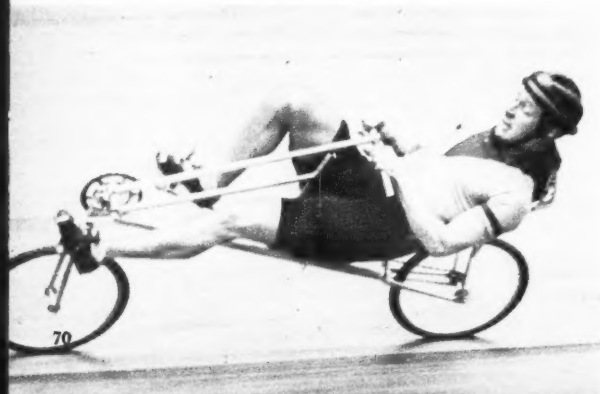
Hand Scooter-Bike (cover cycle) provides exercise for your arm muscles. You pump the handlebars of this three-wheeler to get up speed. Invented by Oscar R. White, left, the 30-pound flyer requires no balance for operation.



Aero-Cycle speeds along at 45 mph without a motor. A 27-inch aluminum propeller operates coordinately with a chain connected to the pedal chain and increases speed on same principle as an airplane prop. Made by Dominick Devincenzi.

Eccentric Cycles

Horizontal Bike can really make those sharp turns during bicycle races. Here's Parisian Francis Faure speeding around the Velodrome D'Hiver during a race with a rider of a "normal" two-wheeler. Monsieur Faure came out on top.



BIZARRE bikes are back! In bicycling's early days, granddaddy went wild over eccentric cycles. Then, bike tastes leveled off. But the comeback of the bicycle industry has changed things.

In 1948, almost three million bikes (eccentric and otherwise) were turned out. Currently, the U. S. owns 14 million cycles—a fifth of the world's total. Even exclusive Skidmore College bowed to the trend and introduced a course in Bi-Psychology!

So, purloin a peek at the two-wheelers on these pages and you'll begin to realize how far the fad has gone since you last looked.



Tomorrow-Cycle is a British-built machine which has a dynamo and motor set storing energy while traveling downhill and releasing it on upgrades. This lightweight oddity was designed by B. G. Bowden of Leamington Spa, England.



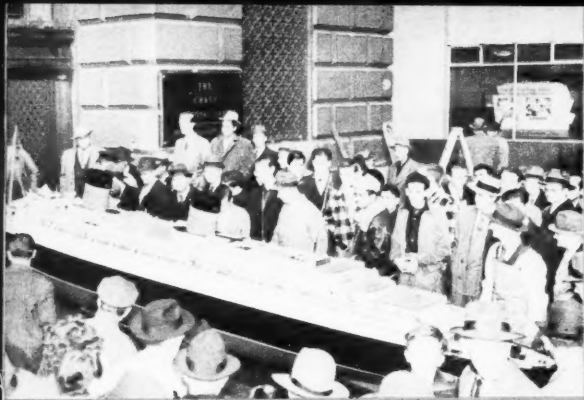
Radio-Bike: a bag in the rear holds the batteries for a four-tube radio. Paul Bayrad, a mechanic of Veray-Sur-L'ognan, France, is the owner-designer-builder of this 56-pound motor bike which allows him to listen to favorite programs.

Lovers'-Cycle is a two-seater upon which couples sit side-by-side. Each rider uses one arm and one foot, leaving the other free for non-cycling activities. Lovers were too shy to face camera.



Family-Cycle comes next in chronological order. It's made of two ordinary bikes welded together with a small baby carriage between them. It was built by Roy S. Henrich of St. Louis, Mo.

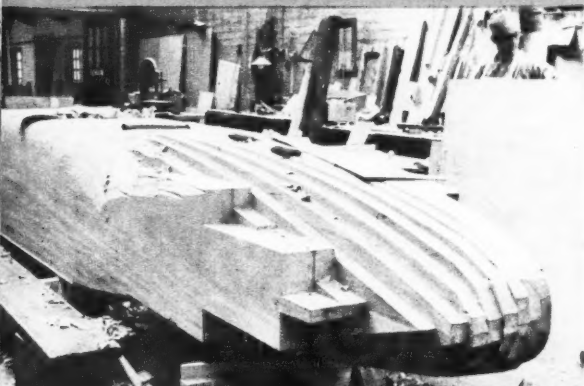




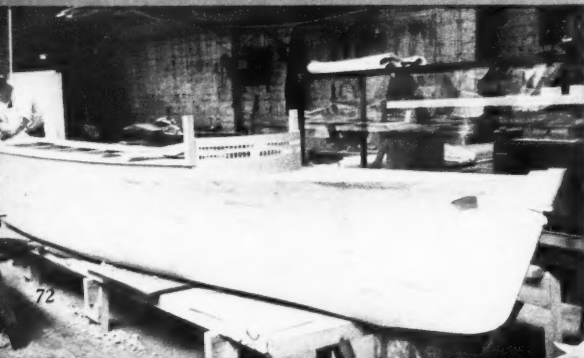
Modelling a Queen



MAGNIFY the miniature ship in the top picture exactly 48 times, put her in the Hudson River and this realistic world's largest model of the world's largest liner would resemble the real Queen Elizabeth, at left, so closely that probably her own skipper would be fooled. Now on display in the Cunard White Star Line's main office in New York, the replica was carved from a six-ton log of African mahogany.



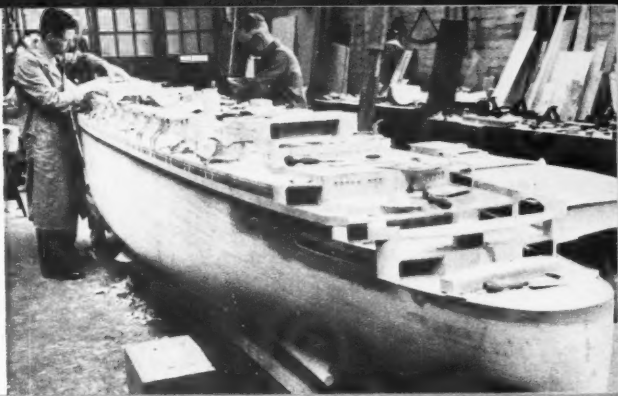
After being kiln-dried for 56 days, during which time 110 gallons of moisture were extracted, the 200-year-old log was split into massive slabs to form the laminated hull of the giant ship model.



Here, one of the skilled artisans at the Northampton, England workshop of Bassett-Lowke, Ltd., checks precise measurements to make certain the 21-foot, seven-inch vessel is being built to exact scale.

Mechanix Illustrated

Slowly the 2700-pound model takes shape as workmen begin mounting parts of her superstructure. Two thousand inch-high metal stanchions strung with a quarter-mile of wire, simulated the ship's railings.



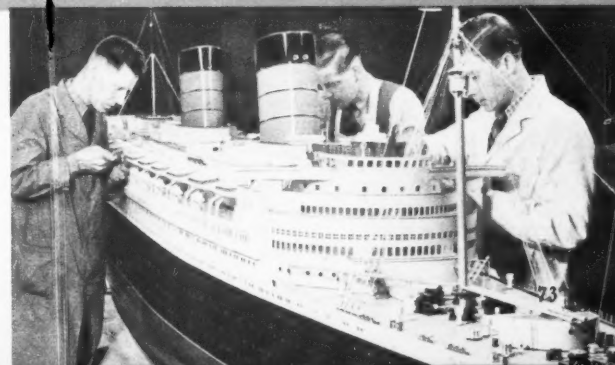
Twenty coats of paint, each well sanded and rubbed, were applied before the midget Queen's gleaming hull satisfied her craftsmen. Plimsoll lines and draft marks were painstakingly lettered by hand.



Tiny winches, capstans and all the other paraphernalia of the real Queen Elizabeth were duplicated accurately. Miniature boat davits were composed of more than 100 individual parts, each hand made.



And here, some 6800 man-hours of labor later, is the finished model of the 83,673-ton, 1031-foot-long empress of the seas. Her destination? A permanent berth in a 24-foot showcase on—Broadway!



A MONEY-MAKING

idea

Mail-order worms get individual attention from Miss Warner. She says their natural oils are good for her hands.

By George Laycock



She'll Sell You a Worm

Queen of America's earthworm farmers is Bernice Warner. Two million of these squirming creatures pass through her hands every year.

EARTHWORMS have gone commercial! You can now drop an order blank in the mail box and get a can of squirming worms by return mail. Worm farmers across the country are raising them in basements, barns, kitchens and corner cupboards.

Dean and queen of earthworm farmers is Bernice Warner who owns and operates the Ohio Earthworm Hatchery at Worthington, Ohio. Her worm enterprise covers two-thirds of an acre which also contains her house and garden. But you can raise a lot of worms on two-thirds of an acre. "We sell about two million worms a year," she says, "and still keep enough breeding stock to raise two million for the next year!"

How does a woman get into the worm-raising business? Well, Bernice Warner

quit her office job in 1938 determined to find a money-making business where she could be her own boss. When a friend suggested that she might raise earthworms she laughed the suggestion off.

Then she reconsidered. Through garden magazines she located other people interested in worms. Dr. George Sheffield Oliver, the country's leading worm scientist, was hoping to find somebody who would lavish the attention on worms that he thought they deserved. Miss Warner wasn't sure about the affection angle, but she *did* see a business with a future.

The doctor taught her the fine points of worm husbandry by mail. When he was convinced that she understood enough of the fundamentals, he sold her 20,000 mature breeders. From that start, she has built her entire business.

When her underground boarders first arrived, Miss Warner made them at home in her basement. She visited local grocery stores and collected all the wooden grape boxes she could find. Each was filled with soil, manure and table scraps. She divided the worms, 500 to each box, moistened them and set them on shelves. Later she moved them into permanent quarters in the backyard. Her production line was under way.

The worms that Miss Warner purchased from Dr. Oliver were of the worm-world elite. Gardeners will no longer settle for any old worm. Before plunking down good inflation cash, they check into the worm's family tree. Some worm breeders sell only "domesticated" earthworms, insisting that these travel no more than two feet a year unless they become hungry or dry. "There are about 1600 species," says Miss Warner, "and the kind we have here are the best ones known for gardening."

Her own gardens reflect the quality of her worms. The strawberry patch is about the size of a large living room yet she picked 196 quarts last year. She explains, "I got the berries but the worms get the credit."

All the worms are raised in four pits. They're low wooden frame structures about ten feet square and filled with waste weeds, soil and barnyard manure.

Earthworms are nature's scavengers. They'll clean up a pile of garbage quicker than you can say "peww!" They eat anything they bump their blind little ends into—one worm eats his weight in soil and wastes every 24 hours. Within his body, enzymes act on the food and he deposits it back in the soil as fertile plant food.

In the process of eating his way toward China, the earthworm leaves a series of burrows that let valuable air and water into the soil. If you investigate the love life of an earthworm, you're in for a shock for worms are bisexual. Even though each worm is both man and wife, he-she must still meet and mate with another he-she to become fertile. Each worm will pass off an egg as a result. In 21 days the eggs hatch and release from two to 16 small worms. And they begin to eat almost immediately.

Miss Warner's average order is for 1500 worms at about a penny each. They're shipped in grape boxes surrounded by the mixture on which they feed. Warner earthworms have been shipped to every state in the Union and to several foreign countries. One order from South Africa was sent by air freight and the shipping charges exceeded the value of the worms.

During the day, Miss Warner's worm herdsman hauls boxes of uncounted worms to the basement. In the evening she and her mother count them one at a time until the orders are packed and ready to be shipped the following morning. It takes a half hour to count 1500 worms. About 600 worms make a good handful but generally the number is difficult to estimate.

Miss Warner points out that raising worms to sell is not a business to jump into. Start on a small scale in your spare time. If you decide there's a future in it for you, then go at it in earnest.

Breeding stock sells for about a penny each. If you start with 1500 worms, your only investment [Continued on page 153]

Selecting the mature worms from the backyard compost pits is the easy job, right. But counting out the day's earthworm orders is a tiring occupation, below, even with her nephew Dan to help.



MI Tests the Hydra-matic Lincoln

This job is a good big car and it performs remarkably well, says Tom McCahill, MI's auto expert. But it's still way out of the Continental's class when it comes to fine styling.

Neither water troughs, left, nor the new test hill, below, on the Ford proving ground caused McCahill trouble in the new Lincoln.



Mechanix Illustrated

WHEN I got the tip that Ford was working on a new Lincoln, I made a quick dash to get all the dope on it. Before leaving for Detroit, I tried to find out from their New York representative just what this change entailed. He didn't know, he said. So, by the time I arrived in the auto capital I was as full of hope as a college boy on his first date with the local siren. My thoughts drifted to a new Continental, a new valve-in-head engine—in fact, I was ready for almost anything. What'd I get? Hydra-matic transmission!

Before I tell you about the test I made on this new job, let's look at the Ford picture. The new '49 Lincolns were reviewed on these pages over a year ago. I told you they were big, fast, comfortable autos and squealed on all turns like an editor being asked for a raise. Since that time, Lincoln's closest competitor—Cadillac—has come out with the finest engine made in America today. And that, my friends, is a tough pill for the Lincoln boys to swallow. If I had any more influence with Ford than the corner bootblack, I'd call a meeting and announce "Look, fellers, the panic is on!"

In this writer's opinion, Lincoln fluffed the ball badly when it let the Continental go by the board. It was the finest looking car ever built in America and that's what seems to sell automobiles. Under the hood, the Continental [Continued on page 159]

SPECIFICATIONS

MODEL TESTED:

Lincoln Cosmopolitan, four-door sedan.

ENGINE:

V-8, 336.7 cu. in. piston displacement, 152 hp at 3600 rpm.

DIMENSIONS:

wheelbase 125 in., overall length 220.5 in., overall width 79 in., overall height (loaded) 62.6 in., tread 58.5 in. f, 60.0 in. r.

WEIGHT:

(including radio and heater) 4631 pounds.

FUEL TANK CAPACITY:

21½ gal.

ROAD CLEARANCE:

8.1 in.

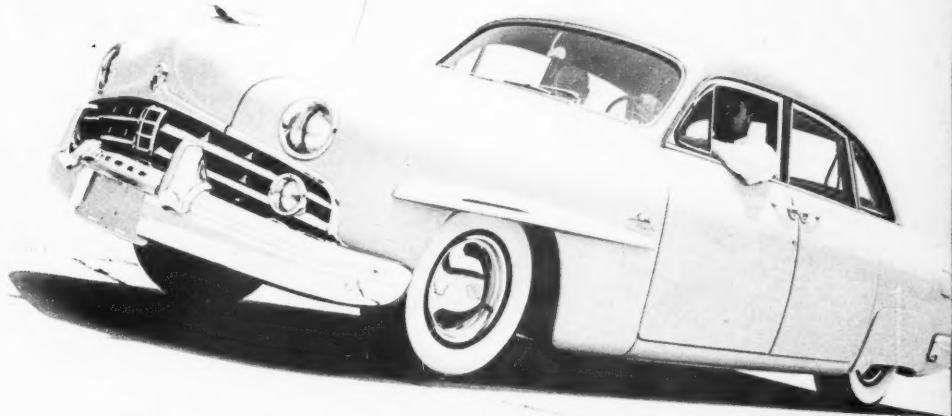
PERFORMANCE FIGURES:

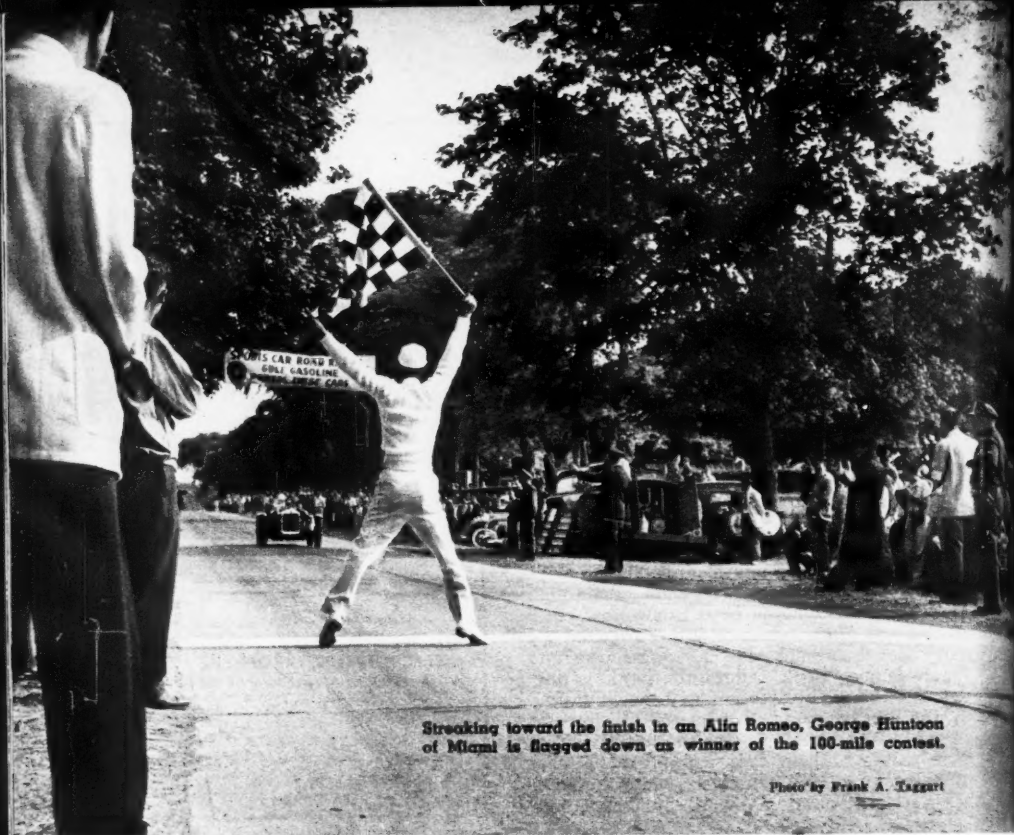
0 to 60 mph—14.8 sec.
10 to 60 mph—13.9
0 to 80 mph—23.6
30 to 60 mph—10.8
top speed—96.6

SPEEDOMETER ERROR:

at 60 mph speedometer reading, the actual speed was 57.97 or an error of 2.03 mph.
at 80 mph speedometer reading, the actual speed was 77.25 or an error of 2.75 mph.

This new Lincoln is basically the same as last year's with the exception of Hydra-matic drive. Here's Tom trying out the big 152-hp engine which he says smooths out the Hydra-matic like a bowl of heavy cream.

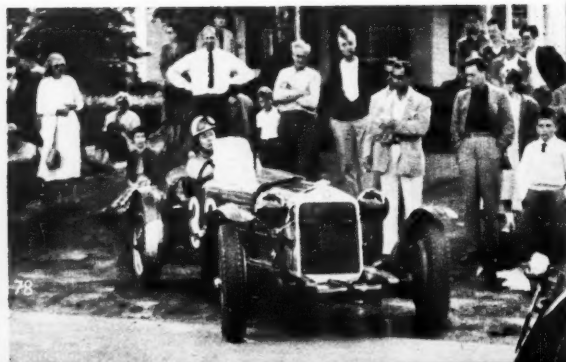




Striking toward the finish in an Alfa Romeo, George Huntoon of Miami is flagged down as winner of the 100-mile contest.

Photo by Frank A. Taggart

Auto *Road Racing*



Huntoon, left, gets into position for the start of the 100-mile event. His supercharged Alfa Romeo is a '36 model.

1

Larry Kulok thrilled road-race fans as he slammed his Allard around tight turns.

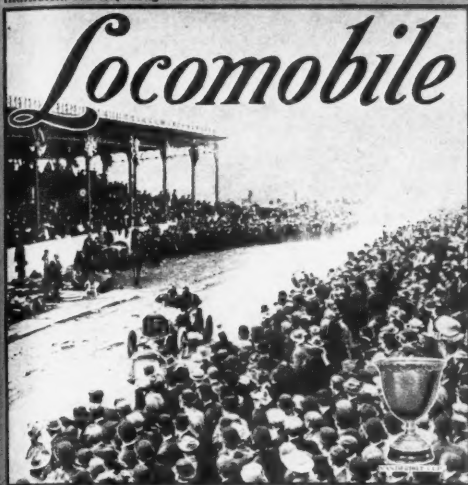
2

Barely missing the bales of hay along a curve, Kulok whips his auto out of a spin.

3

Finally, the pistons in Kulok's engine collapse and drop him out of the 100-mile grind.

Illustration courtesy Long Island Automotive Museum



The '40 Locomobile winning the 1938 Race for the Vanderbilt Cup. Average speed 64.35 miles per hour including stops. Sustained high speed is the supreme test of an automobile, and the victory of our car in this great contest is a triumph for our design and our factory methods. Furthermore the car was two years old when it started in the race. (12 Post Card views of race sent for 10 cents. Beautiful 11 color poster for framing, 10 cents.)

The "30"-A five passenger shaft drive car \$3500.

The "40"-A seven passenger family car \$4500

The Locomobile Company of America, Bridgeport, Conn.
NEW YORK - PHILADELPHIA - CHICAGO - BOSTON - SAN FRANCISCO

Here's how Locomobile's two-man team copped the 1938 Vanderbilt Cup race at a sensational 64-mph clip. Car was actually a 120, although the ad calls it a Model 90.

Even the sleepest farmer five miles away woke up when sport cars hit Bridgehampton to stage a gala revival of the good old Vanderbilt Cup days.

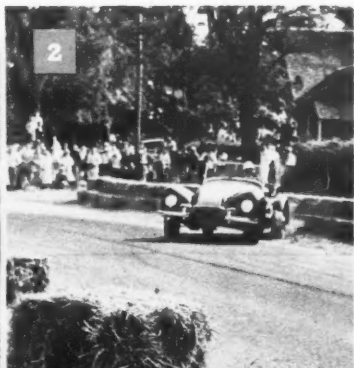
By Tom McCahill

ROAD racing, a red-hot sporting event in the early 1900s, came back with a roar on Long Island last June 11 when a million bucks' worth of deep-throated sport cars practically stampeded the little farming community of Bridgehampton.

Before the races, the town's stores and streets were all decked out for an old fashioned four-wheeled fiesta. The Lions Club, sponsors of the event, helped the visiting racers and auto-club men celebrate the occasion and the local chapter of the American Legion staged a carnival for everybody. Old-timers swapped yarns about the Vanderbilt Cup days of long ago. By midnight, though, the villagers wanted to call it an evening. They hadn't realized how much racket a pack of high-powered race cars can make. And they didn't know that sport car men never sleep the night before a race.

Sport car after sport car howled through the night like banshees on a bat, as their drivers made final tune-up adjustments on their expensive and temperamental iron wagons. And police phones burned as complaints jammed in from a five-mile circle around Bridgehampton:

Comes Back!





McCahill, far left, talks to Briggs Cunningham on the grass "grandstand." Briggs is worrying about his Ferrari, at right. A broken oil line knocked it out of the race after it had led the field for many turns.

"Who's responsible for this outrage?"
 "Why, don't those racing maniacs go to bed?"

It was the noisiest Friday night and Saturday that Bridgehampton ever had. But seeing those thousands of people who lined the four-mile course on race day gave me a real charge. I was glad to find out that Americans can still get a thrill out of automobiles. And I was even happier to get a premonition that automobile road racing—a spectacle that most of these people had never seen before—had a darn good chance of coming into favor as a top-ranking crowd-puller.

For the benefit of anybody who came in a little later than your Uncle Tom did, I'd better explain what road racing is—and was. And the best way to do that is to tell you a little bit about the most famous road race of all time, the celebrated and long-gone-by Vanderbilt Cup series, also held on Long Island, which began in 1904 and ended a few years later.

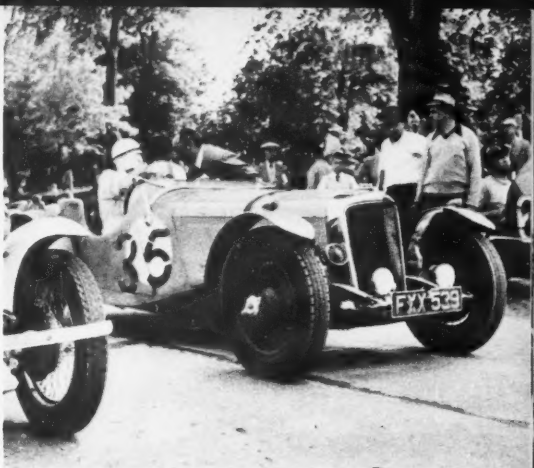
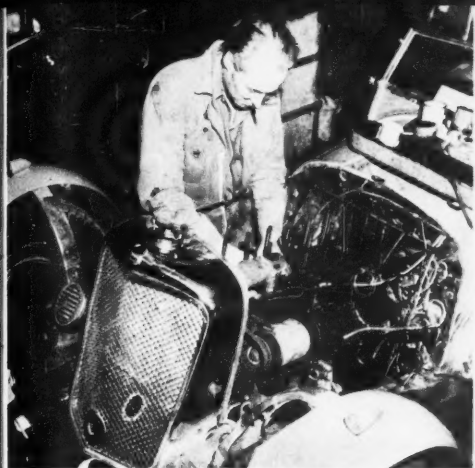
Automobile races for the trophy donated by William K. Vanderbilt, multimillionaire sportsman, were run over the narrow, twisting, high-crowned roads of 40 years ago. It was one of the top sporting events in an era when sport largely was restricted to the idle rich.

Everybody who rated in the social swirl turned out for the Vanderbilt Cup races. For the dough-loaded sportsmen whose cars were entered, the races provided a sort of second-hand rivalry, though, for in those days professional drivers and pit crews did all the work and took all the risks, while the owners watched from the safety of their broughams and tallyho's, well stocked with chilled champagne and caviar sandwiches.

There were exciting moments in the old Vanderbilt races, and plenty of dull ones, too. The cars, almost all of them foreign makes, were slower than the fleet, super-charged racers of today. And, since the

Max Hoffman gives his driver, A. E. Goldschmidt, the word before the second race starts. His Lea Francis completed only two laps.





The mechanic, above, was flown into Bridgehampton from New York to work late into the night on a prewar S. S. Jaguar owned by T. L. H. Cole, Jr. Next day Cole, right, jockeyed it to second place in the 100-miler.

cup committee usually laid out a 30-mile course, a half-hour might elapse between the time one roaring wagon skidded around Dead Man's Corner and the next one hove into view. This didn't help to make road racing one of the best of all spectator sports. The factor that finally killed it off over here, however, was danger. Too many people got killed. Worse yet, in the opinion of the still hungry automobile manufacturers of those days, too many prospective buyers of gasoline buggies were scared away from the product.

As it is currently being revived, road racing is still pretty much of a rich man's sport. But with this important difference;

the wealthy Joes today do their own driving and, to a great extent, their own repair and tune-up work. The cars they drive are, of course, much faster. And the races, thanks to careful planning, have thus far been not only safer but more exciting. At Bridgehampton the course was only four miles around and the cars, speeding around 90-degree turns and S-curves, were in view of spectators most of the time. And nobody got hurt. If they had, road racing might have been banned from the United States—this time, forever.

I was just a kid in short pants during the original Vanderbilt Cup days but I have more reason to [Continued on page 145]

In race day's most colorful show James Melton, left, steams up his Stanley Steamer for the start of a parade of ancient cars. Cunningham, behind the old Mercer's circular windshield, broke an axle after a lap.



Hit...or Miss?

By Raymond R. Camp
Gun Editor, N. Y. Times



Your eye may be good and your hand as steady as a rock, but still your shots go wide. A rifle expert tells you why.

The author holds a sling-equipped match rifle with the sling-swivel attached to the wooden fore-end and not to the barrel. The latter is used for hunting rifles where the sling has a single purpose: to help carry it, not shoot it.

THERE are more things between the trigger and the target than most shooters realize. The thousands of hunters who shoot and miss will find greater pleasure in their sport if they will take the trouble to correct some of the simple things which destroy accuracy.

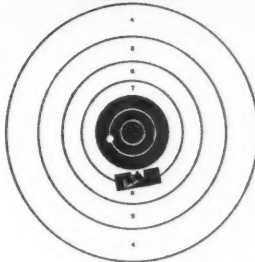
It has been said that poor shooting is the fault of the shooter rather than the gun, but like all dogmatic statements this one, too, has exceptions. The man who can hold a rifle like a rock, take a perfect sight picture and squeeze off the trigger perfectly will not necessarily turn in a perfect score, either on the field or on the range. There are factors other than the physical "shoot-

Don't rest your rifle barrel on a stone wall or against a tree to steady it. Get your hand in between like Chet Cummings with his Marlin 39-A.

Resting the wooden fore-end isn't too bad but will spoil accuracy to some extent. The method of holding alters the metal barrel's vibrations.

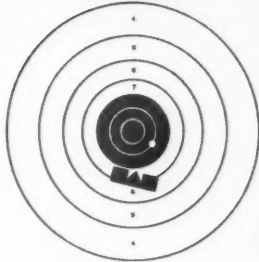


STANDARD AMERICAN
12 YARD TARGET



Failure to hold your rifle level, technically called "cant," will spoil your aim—very much so at long ranges. Drawing at left shows sight canted to the left and resulting hit. At right is result of sight canted to right.

STANDARD AMERICAN
12 YARD TARGET



ing" of the rifle which must be considered.

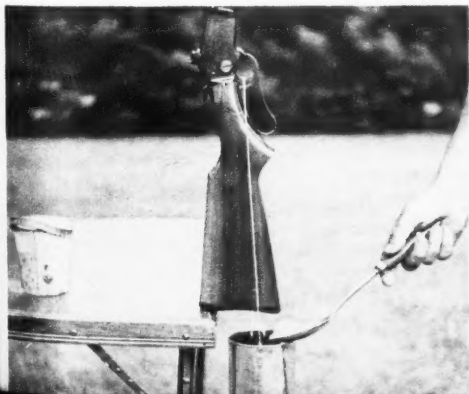
Many things affect accuracy. Most of them are quite simple, but it is surprising how few shooters are aware of them. A man will travel a thousand miles and spend several hundred dollars and a couple of weeks of his time on a hunting trip, only to come home without game because he was unfamiliar with his rifle and the means of obtaining real accuracy from it. Suppose we go over some of the things which direct the bullet away from the target, not necessarily in order of their importance, for all are important.

One of the points overlooked by many shooters is the "bedding" of the rifle—the manner in which the barrel and receiver fit the stock. Just recently I received for field testing a new and extremely expensive foreign rifle, equipped with a fine 20-power telescope sight. I used fine ammunition and a sturdy bench rest, but was unable to get satisfactory 10-shot groups. The rifle should

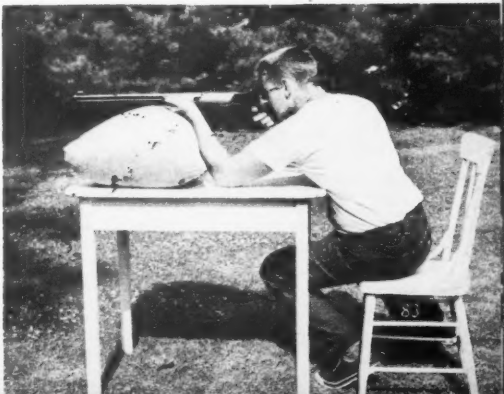
have put 10 shots in a group that could be covered with a half-dollar, especially at 100 yards. Instead, the group could hardly be covered with a saucer. I discovered that the "wild" shots were the first six. The following four were very well grouped. This indicated the possibility of improper "bedding," so I checked the tightness of the screws at the fore-end and the receiver. I found that one would take a full turn, the other more than a half turn. The next ten shots gave me a 1 1/4-inch group. For a deer rifle a bullet error of four or five inches "might" not have been too important but this was a varmint rifle, and this shooting calls for a higher degree of accuracy.

Just prior to this I had received a handsome American rifle for test, and it came directly from the factory. Here also the bedding was unsatisfactory. So much so that home repairs would not answer and the rifle had to be returned to the factory for correction. So, [Continued on page 154]

To test trigger pull, tie string to can and run it over the trigger as shown. Then pour sand in can until rifle fires. Weight of can of sand is the pull.



To sight in a rifle, use a sturdy table and a sand-bag. Don't rest the rifle directly on the bag, but use your hand to steady it. Use a comfortable chair, too.



THIS MONTH'S

prize gadget

Camera-in-a-box: MI News Editor Arthur Unger pushes up the cardboard finder and moves film till number 1 appears. Then, left, making sure the finder is straight, he takes pictures of pretty Anne Buccheri.

Next, package is addressed to Photo-Pac Co., 5403 Greenville Ave., Dallas. Return address goes on top.

After putting the necessary postage (7c) on it, Art drops the camera into the mailbox just as it is.

A week later, prints and negatives arrive. Also enclosed is a yellow slip analyzing the shots.

Mailbox camera photograph: here's one of the snapshots taken. It's a 3¼-by-4½ inch print.

Photos by Bob Brightman



Here's inventor—engineer A. D. Weir fiddling with the feeding device of the Photo-Pac camera.

Mailbox Camera

HOW often have you arrived at a scenic beauty spot without your camera? A. D. Weir got caught on this pictorial limb so many times that he decided to do something about it.

The simplest remedy was a pre-loaded camera which could be rented at a near-by store for a small fee. That wasn't a new idea—but in the past, devices to handle film inside such a camera had cost too much. Weir, a mechanical engineer, worked out a plan for feeding the 35-mm film without using a metal spool or winding device.

So, now you can drop into your drug-store, ask for a Photo-Pac and for \$1.29 you get the loaded camera. After you take your eight exposures, you drop the entire unit in the mailbox. A few days later the mailman brings your prints and negatives. For helping to convert Uncle Sam's mailboxes into darkrooms, we're sending Mr. Weir MI's \$50 Prize Gadget Award. •

WIN
\$50

Dreamed up a million-dollar gadget? Well, even if it's not worth quite that much, send us a picture and a detailed description. We'll consider it an entry in MI's \$50 Prize Gadget contest. Address material to Gadget Editor, MECHANIX ILLUSTRATED, 67 West 44th Street, New York 18, New York.

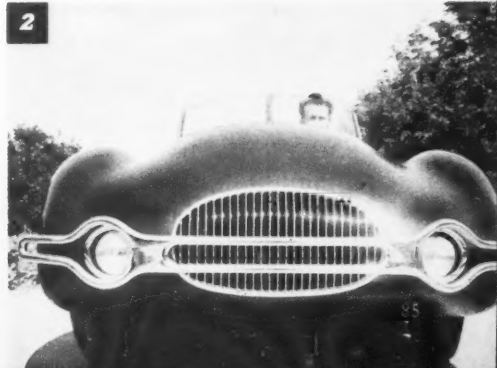


Home-Made Streamliner

HERE'S a little workbench project you can try out some evening. But remember, the job (pictured above) took mechanical engineer Norman E. Timbs 2½ years of sparetime work and cost him around \$10,000.

The chassis is of tubular construction and the car itself is 17½ feet long with a 117-inch wheelbase. It weighs 2300 pounds. The hydraulically raised rear deck (1) covers a Buick engine (just behind the driver's seat), gas tank (between the wheels) and a spare tire and wheel. And the front hood (2) covers a luggage compartment.

Some pedestrians think the auto looks like a whale; others think it resembles a turtle. But, whale or turtle, all agree they'd like to own the "critter" themselves. •





They Blow Up Broadway

THAT sinister character above is getting set to blow up Broadway.

Comes the revolution? Nope. The FBI won't be tracking down this fellow or any of his gang, who are making their daily living from spectacular blowups. For "spectacular" is the name for the huge neon signs that skilled craftsmen are creating in a modern revival of an ancient art.

Glass-blowing dates back to 300 B. C., when some bright Phoenician worker tried a new way of working the molten material. Today's glass-blower still uses the basic technique developed in that distant past.

The old craft survives despite the invention of a glass-blowing machine, because of the complexity of the glass shapes used in electrical displays. Dozens of master glass-blowers shape more than a 1000 feet of neon-filled glass tubing to form a single spectacular on Times Square. They become so skilled at their craft they can huff a straight piece of hot glass into a tight knot, then puff it out perfectly straight again.

These modern artists in glass really are blowing up Broadway—blowing it up into a Greater White Way. •



Before "blowing up" a neon sign, the glass worker, top, bends straight tubing over a wide gas burner.



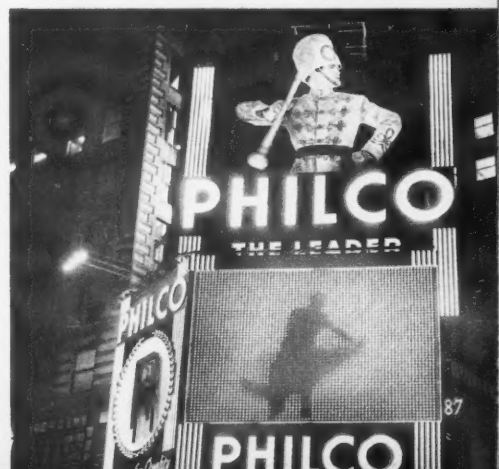
The blower now starts puffing a hot, pliable bit of glass into a pretzel-like curlicue in the sign.



To splice two ends of glass tubing together into a perfect circle, the blower uses a special torch. Below, craftsman puts the electrode in the tube.



A skilled "patcher" traces a section of tubing on an asbestos pattern to finish up a missing part. Below, here's what they DID blow up on Broadway.



NEW in SCIENCE

Speedy Trencher

digs wide swaths through hard frozen ground at 350 feet an hour. All operations are made from tractor. Miss. Engineering Co., Grand Mound, Iowa.



Newest Telephone

has volume control on the buzzer and an equalizer which adjusts sound level to compensate for distance between phone and central office. Numbers and letters are located outside the finger wheel.



Auto Wind-O-Plane

makes every kid a hot pilot. It's a model of the Douglas Skystreak and clamps to the car window with control stick which can be maneuvered from inside. Wilbroco, Inc., Arcadia, Calif.



Breathing Balloon

will develop your form, if that's what you want. It'll also train you to breathe deeply by measuring your lung capacity by means of the shut-off valve. Moore's, 14548 Forrer Ave., Detroit, Michigan.



Family-Type Pool

is made of Vinylite plastic, big enough for Mom and Dad as well as the youngsters. It comes in smaller sizes as well as the big 170-gallon variety. Bilnor Corp., 71 Baruch Pl., New York, N. Y.





hobby

HALL OF FAME


Chauncey G. Suits—

Scientist Builds a Better Boomerang

WHEN Dr. Chauncey Guy Suits steps into the backyard of his home at Schenectady, N. Y., he throws away his daily worries as director of General Electric's research lab—tosses 'em all into the air on a boomerang of his own design.

During the war Dr. Suits flew to Australia on a technical mission for the Secretary of War. He marveled at native skill with a 10,000-year-old aerial weapon, the bushman's boomerang. But when he tried some out at home, he couldn't make any of them come back to him consistently. Curious, he began studying the aerodynamics of the missile. He soon found out they were inaccurate in flight, even when expertly thrown. So he started turning out boomerangs of his own in his workshop and made 60 experimental models. Finally, he designed an entirely new boomerang of thin, laminated veneer—a "2000-year advance" over the original, crudely carved Australian stick. Now he can make his boomerang land right at his feet eight times out of ten.

Some day he hopes to go back and see what those boomeranging bushmen can do with his scientifically better boomerang. •



Working late at night in his own workshop suits Dr. Suits to a T when the task is designing or fabricating his latest version of the missile invented thousands of years ago by the aboriginal bushmen of Australia.

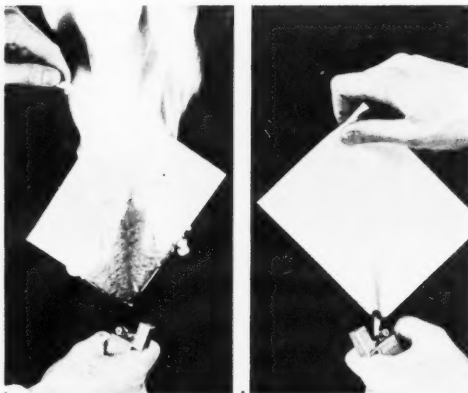
New for the Home

Sun Naps won't lead to lobster complexions if you use this gadget which shuts off lamp automatically. Good for pressure cookers and other appliances. Paragon Electric Co., Two Rivers, Wis.



Baby Dishwasher cleans service for four in five minutes, using no more water than hand-cleaning requires. Powered only by water pressure, this portable unit dries the dishes, too. Cameron Corp., 2066 East 70th Street, Cleveland.

Fireproof Shade is made of unfilled cotton cloth with vinyl plastic coating. Conventional window shade, left, blazes while coated one, right, resists flame. Stewart Hartshorn Co., New York.



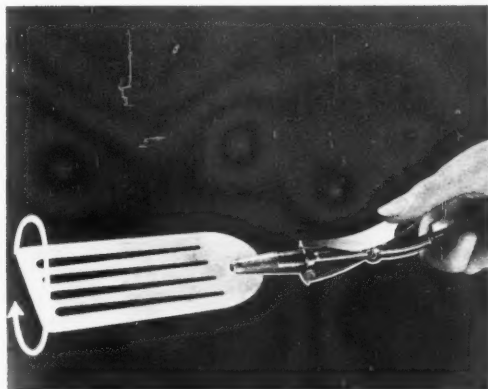
Steam Ironer puts the crease back in those baggy trousers. It's an attachment used with a regular electric iron and produces steam by a safe "flash-boiler" method. Won Lewis & Conger's top safety award. General Mills, Inc., Minn.





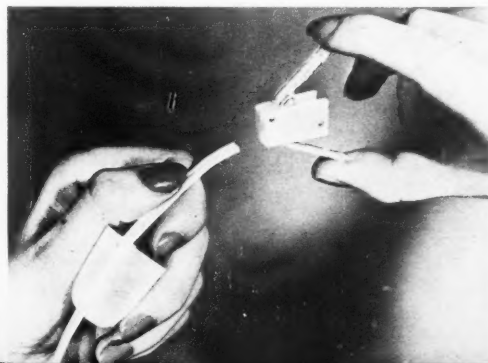
Handy Gardener is a lawn mower which picks up leaves and twigs, grinds them into small particles and drops them back on the grass. This not only simplifies a back-breaking task but rebuilds the soil. Ronnco Prod., Minneapolis.

Friendly Doorbell gives your messages to callers. A three-way switch can be set for In, Out or Neutral. Then, when somebody rings, a light shines with the correct message on it. Invented by Maurice Phillips of Westinghouse.



Rotating Flipper is the gourmet's delight. It turns over sizzling food when you press a lever located in the handle. Won't break the egg yolk, either . . . if you're careful. Ward Phillips Co., Chicago.

Towel Gripper makes dish-cloth-hanging a one-finger operation. Four rubber holders grasp the cloths leaving you free to try balancing the dishes in your other hand. A. J. Ganz Co., Hollywood.



Automatic Plug can be attached by anyone, even your non-mechanical wife. It requires no tools—just push the wire in and press prongs together. Academy Electric Products, New York, N. Y.

Arctic Pigmy Tank

By Frank Tinsley





If enemy paratroopers ever invade Alaska, our most effective defence would be one battalion of midget tanks like these, thinks MI's war weapons expert.

SUDDEN airborne raids could easily turn our arctic bases into enemy staging points for bombing attacks on Chicago, Detroit and Pittsburgh! And a tiny pigmy tank may turn out to be the weapon which will save us from this fate.

For centuries, the natural barriers of the Polar regions have afforded America complete military security in the north. No hostile surface force could successfully launch a large-scale attack across the frozen ice cap that crowns the top of the world.

Since the end of World War II, however, the phenomenal development of long range aircraft and guided missiles has nullified nature's protection in the Arctic. The magnetic pole has become

a mere signpost to point the shortest routes between the industrial centers of the northern hemisphere.

The rapid growth of Polar air bases is proof that the great powers are well aware of the changing situation. Russia has established a system of flying fields in eastern Siberia and we have countered with a triangle of huge Alaskan air depots.

The ground defence of these vital outposts has become a pressing problem for us. It has been reported that at least eight Russian paratroop divisions are stationed at jumping-off points a few short hours from our Alaskan outposts. To combat such possible attacks we need a comparatively small, highly mobile striking force, capable of destroying enemy airheads before they can be consolidated. This means a force built around fast, light tanks with heavy firepower.

Unfortunately, at present we have no small, speedy, paratroop destroyer to carry out this strategy. Our standard tanks were designed mainly for operations in North African and European terrain. They're too heavy and slow for agile Arctic warfare. During last year's maneuvers even our "light" tanks bogged down completely in the queasy Alaskan marshes.

Obviously, we need an entirely new type of ultra-light, armored vehicle designed to operate under Arctic conditions. We have a successful cargo carrier that may serve as a design springboard—the Weasel. It was produced during the last war to meet very similar operating conditions. With its unusually wide, caterpillar tracks and watertight hull, it could snowshoe across deep drifts, ride the surface of quaking bogs and belly through muddy swamps that would stall any other vehicle.

Using this Weasel as a model, let's see what we can produce in the way of an Arctic Pigmy Tank to run down enemy paratroopers in the Alaskan wilderness.

The machine must be small and light, with tracks as wide as possible to give it maximum bearing surface. Its armor need be only thick enough to turn small-arms and machinegun fire—it will have to depend upon agility to evade bazooka and anti-tank shells. Its armament, on the other hand, should be heavy not in actual weight but in anti-personnel fire power.

Getting to work with slide rule and drafting tools, we find a fairly presentable whip-pet tank shaping up on the drawing board. This Pigmy is as small as crew, armament and track limitations permit. At its tallest point, the deck is shoulder high to a six-foot GI and the turret tops his helmet by a scant

six inches. The overall height with periscope fully retracted is 7 feet 6 inches, just enough for good visibility in Alaskan forest and bush areas.

As wide as it is long, with an extremely low center of gravity, the Pigmy is exceptionally stable—almost impossible to capsize under ordinary conditions. The Weasel-type tracks are each three feet in width, giving the machine a snowshoe-like traction surface of 45 square feet—about two-thirds of its overall size!

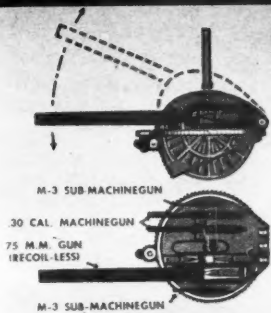
The Pigmy's tucked-up belly permits it to negotiate all sorts of rugged terrain. A pair of bullet-proof, rubber pontoons concealed in side compartments provide for deep water crossings. A three-bladed propeller, taking off from the rear of the gearbox and a small rudder provide marine propulsion and control. Both are mounted above the belly line and are protected from ground damage by a heavy plate.

The power plant consists of a six-cylinder version of the new aircooled tank engine recently developed for the Ordnance Department. It's equipped with an automatic transmission and the usual tank clutches and brakes. The engine and fan are mounted amidships in a fireproof compartment with cooling louvres opening on the rear deck. An airplane-type rubber fuel cell occupies the space forward of the fire wall. The transmission and rear end take up the after section of the belly.

The regular crew of this Arctic Pigmy Tank consists of two highly trained non-coms. A sergeant-gunner commands the combat team and a corporal driver-mechanic operates the tank. Each is trained to replace the other. In an emergency, the tank can be operated single-handed.

For this purpose, all driving and fire controls are duplicated. And to minimize the effect of an enemy hit, the men are widely separated, each occupying individual armored compartments atop the tracks. During action, they ride in "prone pilot beds" similar to those recently adopted by the Air Force. Combat periscopes, built into the forward and side hatches, provide good visibility ahead and to the flanks. In addition, a submarine-type periscope permits a telescopic, 360 degree field of vision.

The Pigmy's armament is varied. A 75mm recoil-less gun takes care of long range bombardment. The gun's light weight and compactness—105 pounds, 80x12 inches—make it a natural for light tank use. It's fitted with a gas-operated, semi-automatic loading mechanism and a drum-type magazine. Sighting is through the telescopic periscope. [Continued on page 148]



M-3 SUB MACHINEGUN

.30 CAL. MACHINEGUN

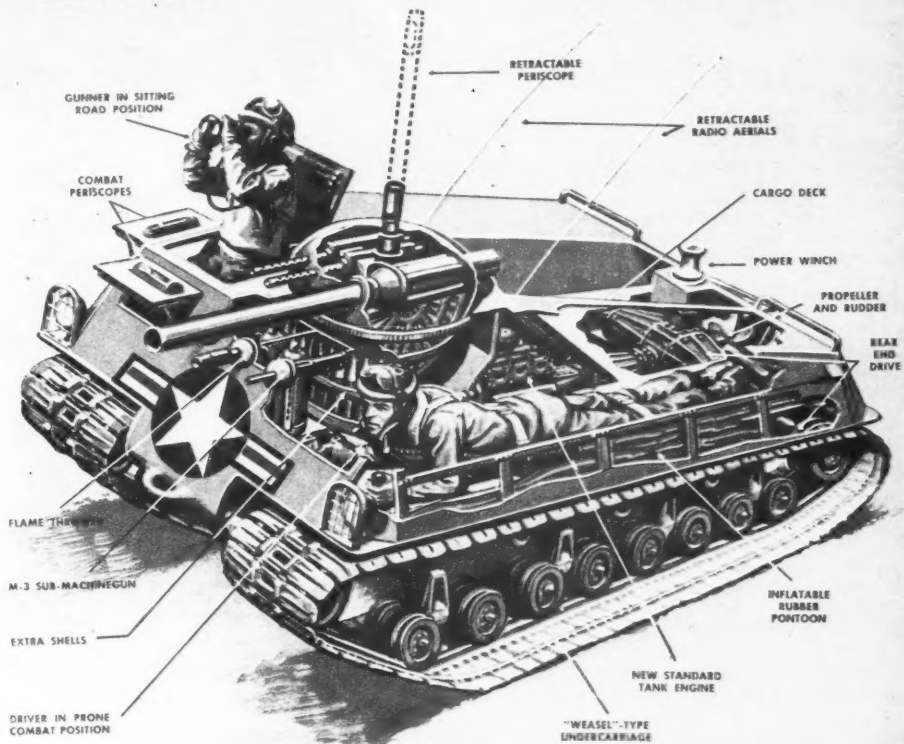
75 M.M. GUN
(RECOIL-LESS)

M-3 SUB-MACHINEGUN

PROFILE AND PLAN VIEW OF
360° TILTING TURRET, SHOWING
ARMAMENT ARRANGEMENT



PLATOON OF PIGMY TANKS, PERSONNEL,
SPARE FUEL AND AMMUNITION, CAN BE
CARRIED IN NEW C-124 TRANSPORT



DRIVER IN PRONE
COMBAT POSITION

EXTRA SHELLS

M-3 SUB-MACHINEGUN

FLAME THROWER

"WEASEL"-TYPE
UNDERCARRIAGE

NEW STANDARD
TANK ENGINE

INFLATABLE
RUBBER
PONTON

REAR
END
DRIVE

PROPELLER
AND
RUDDER

POWER WINCH

CARGO DECK

RETRACTABLE
RADIO AERIALS

RETRACTABLE
PERISCOPE

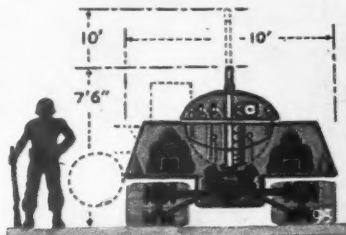
GUNNER IN SITTING
ROAD POSITION

COMBAT
PERISCOPE

FRONT VIEW OF PIGMY TANK SHOWING
COMPARATIVE SIZE AND ARRANGEMENT,
FUEL AND AMMUNITION SHOWN IN RED



PIGMY TANK CROSSING STREAM
WITH BULLET-PROOF RUBBER
PANTOONS INFLATED



FRANK TINSLEY '49

Workbench Award Winners...

B. J. Alto, of Seaside, Ore., is our first winner. He writes, "I am enclosing a snapshot of the boat I made last winter from MI Plan No. 967—Flying Fisherman. This was my first attempt at boat-building. With the aid of your easy-to-read plans, it was a fairly easy project, taking about three months of spare time to build and costing approximately \$65 for materials. This is a wonderful all-around boat — both sturdy and light."



THE winner—all of 'em! The six projects shown on these pages were the best Workbench Award entries received during the month. A five-dollar check and a Workbench Award Certificate are being mailed to each winner for his prize project.

If you are a workshop fan, then why not let us know what you're doing? Send us a picture and a letter describing your project. If your entry is one of the monthly winners, you'll receive our check and Workbench Award Certificate, which, incidentally, is suitable for framing. If your entry is not one of the published winners, you

still may win our handsome Certificate of Merit. Past winners of Workbench Awards may submit new entries, but the photos must be of a new project. Clear snapshots will do, but wherever possible glossy enlargements are preferred. We like to see your creations—but we also like to see you, so if at all possible submit a photograph of yourself with your project. Enclose sufficient stamps for return postage and mail your entry to:

MECHANIX ILLUSTRATED Workbench Awards,
67 West 44th Street, New York 18, New York.



The midget jeep at the left was built by Valentin Labata, of Leyte, Philippine Islands. He starts his letter by asking, "I wonder if Filipinos are qualified to enter your Workbench Award contest?" They sure are, Val. We base our awards on ability, not nationality. He goes on to say, "A 3-hp. Wisconsin engine drives one rear wheel through a belt, giving 25 m.p.h. top speed and 75 to 80 miles per gallon. The brake works through the other rear wheel. I received help from my father, who donated the engine and the wheels, and two relatives. That's me in the middle. The other two boys are the helpful relatives."

Mechanix Illustrated

George Andrews, of Akron, Ohio, who likes to drive midget racers, wants his son to follow in his footsteps; so he built this "midget midget" for Junior. It isn't powered now, but George plans to mount a Ford starter motor on the rear axle. Eventually, after Junior masters the battery-driven job, a one-cylinder gasoline engine will be employed for power.



Our next award goes to a proud wife and mother, Mrs. S. C. Matula, of Boyceville, Wisconsin. Her letter reads, "I cannot help but forward the enclosed snapshot of a tractor my husband made for our youngsters. It really has created envy in everyone who sees it. It stops traffic and all children just must touch it and ride in it. I am sure your readers will be interested. It is powered with a 2/3-hp. engine and will pull four coaster wagons carrying 12 children. Our boy in the snapshot is just four years old."



Boats are always popular with our craftsmen. L. E. Means, of Houston, Texas, constructed this one. He says, "Here's Snuffy (Plan No. 955). I am very proud of her, as she performs beautifully with a 5 1/4-hp. outboard motor. I used white oak for the frames and Douglas-fir plywood for the planking. The total cost of materials, including paint, was \$105.08." That's a beautifully finished boat, Mr. Means. We don't blame you for being proud. And look at the happy expressions on the four huskies that she carries with ease. Envious? Well, right now's the time to start making a boat of your own from MI's tested plans.



Another boat. This time it's Comet, our 16-ft. inboard runabout (Plan No. B-147). Builder Clifton D. Mayo, of Bell Gardens, Cal., states, "I began work on the boat early last fall and launched her this spring in Big Bear Lake. Although this is the first boat I have built, the easy-to-follow plans and directions made for quick progress. She has a four-cylinder Gray marine engine, which makes her step out at a good rate of speed." We'll bet it does, Cliff, and what a thrill, eh?





This sundial in Baltimore was built to show the time in all the large cities of the world. (Photo from Ewing Galloway.)

a sundial for your garden

Sundials are not only decorative adjuncts to outdoor gardens and walls—they're also fascinating and fairly reliable time tellers.

By Carl W. Bertsch

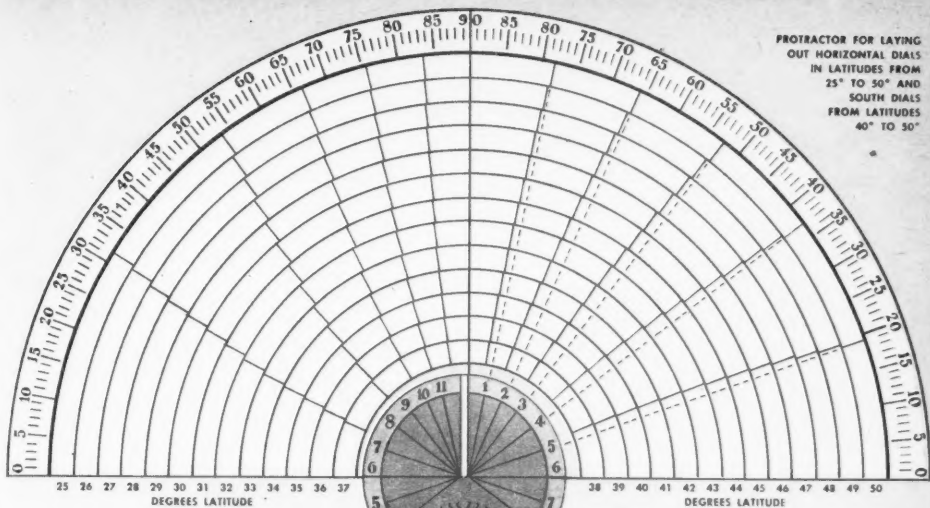


SUNDIALS may be made of a variety of materials; the only requirement is that they be weatherproof. Exterior-grade plywood, stainless steel, aluminum, opaque plastics, brass, copper, bronze, concrete, ceramics, and slate are all useful. Hour lines and numerals may be painted, etched, or carved.

Of the four types of dials, the horizontal is the most complete, registering time from sunup to sundown. It must be perfectly level. Next is the South dial, which must be vertical. The East and West dials, also vertical, are limited in time-telling to half the arc of the sun.

Sundial layout is based on the latitude in which you live. To find this latitude, refer to any good map. It is then easy to lay out the hour lines, using the accompanying protractor for horizontal and South dials and the diagram for East and West dials. On horizontal and South dials, the moon line is always at right angles to the 6-o'clock line and the style point toes the 6-o'clock line. On East and West dials, the style is always on the 6-o'clock line. The style in all cases must be at right angles to the dial. •

PROTRACTOR FOR LAYING
OUT HORIZONTAL DIALS
IN LATITUDES FROM
25° TO 50° AND
SOUTH DIALS
FROM LATITUDES
40° TO 50°

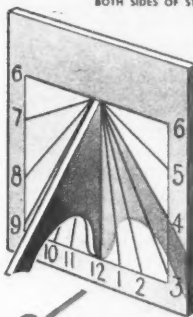


HOUR DIVISIONS
ARE SAME ON
BOTH SIDES OF STYLE

PROJECTION
OF OPPOSITE
NUMERALS —
ALLOW FOR
STYLE THICKNESS

STYLE ANGLE
IS 90° MINUS
DEG. LAT. OF
LOCALITY

FACE OF
DIAL MUST
FACE DUE
SOUTH

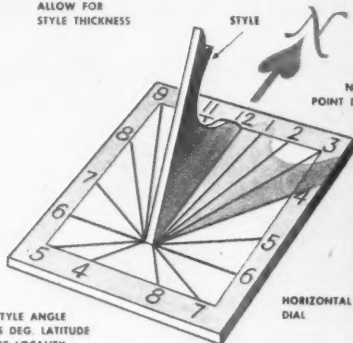


SOUTH DIAL
(VERTICAL)

EXAMPLE

LAYING OUT A HORIZONTAL
DIAL IN LATITUDE 50°
AND A SOUTH DIAL IN
LATITUDE 40°
TO FIND CORRECT LATITUDE
BAND FOR SOUTH DIALS,
SUBTRACT LATITUDE OF
LOCALITY FROM 90°
(90° - 40° = 50° BAND)

STYLE THICKNESS
IS DEAD SPACE



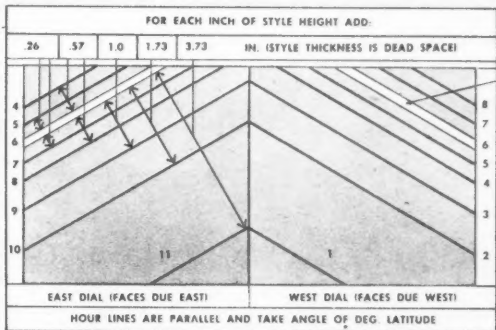
NOON MUST
POINT DUE NORTH

STYLE ANGLE
IS DEG. LATITUDE
OF LOCALITY

HORIZONTAL
DIAL

CALCULATING EAST AND WEST DIALS

EAST DIAL
(VERTICAL)



WEST DIAL
(VERTICAL)



SLOT
SOLDER

BRASS
ROUND-HEAD
MACH. SCREW

WASHER

NUT

STYLE

BRASS OR
COPPER RIVET

BRASS STOVE-BOLT
HEAD CUT OFF

BRASS
ANGLES

BRASS
MACH. OR
WOOD
SCREW

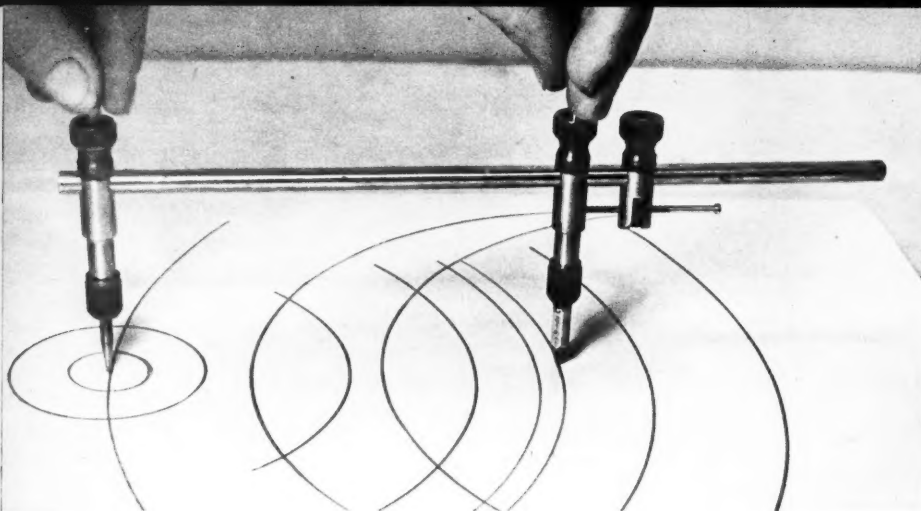
OUTDOOR
PLYWOOD

SLOT RECEIVES
STYLE—GLUE 99

ATTACHING STYLES TO
NON-SOLDERABLE DIALS

ATTACHING NON-SOLDERABLE
METAL STYLES TO DIALS

ATTACHING WOOD STYLES
TO WOOD DIALS



machine this **BEAM COMPASS**

A Lathe Project by Frank Faber

Tool Room Section Foreman, Sperry Gyroscope Company

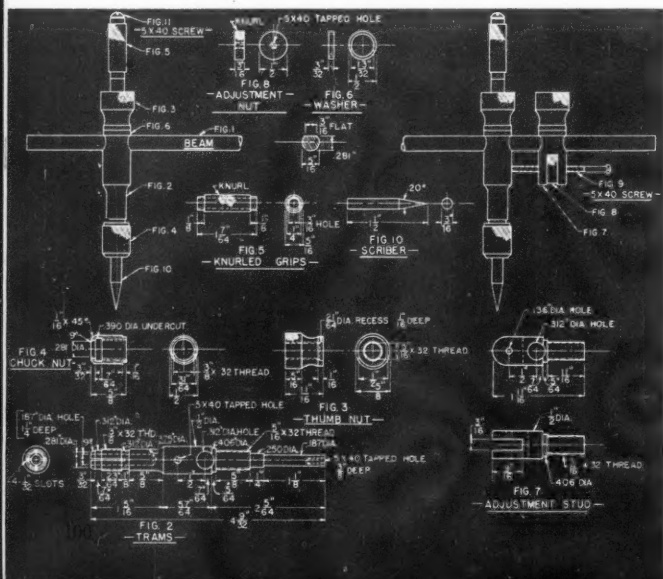
A rigid, well-built beam compass is invaluable for all kinds of layout work on paper, wood, sheet metal, and plastics. With its 13-in. beam, this one will scribe circles from $\frac{5}{8}$ to 24 in. in diameter. If desired, a 26-in. beam can be added to obtain circles up to 50 in. in diameter. All parts are made from drill rod or cold-drawn steel.

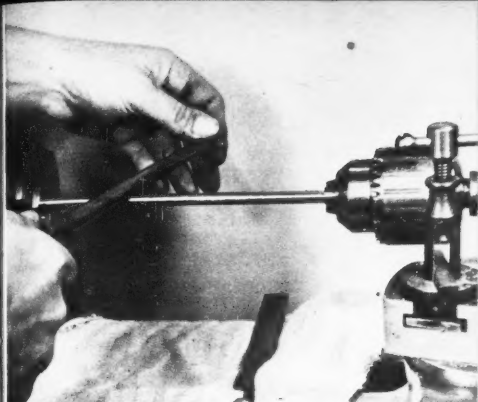
The flat on the beam forms a bearing surface so the trams can be locked firmly

and squarely in place. After completing the beam and the trams, turn, knurl, drill, and chase the three thumb nuts (Fig. 3) and the two chuck nuts (Fig. 4). Two knurled grips (Fig. 5) are reamed out for a slip fit over the tram ends and held in place with machine screws.

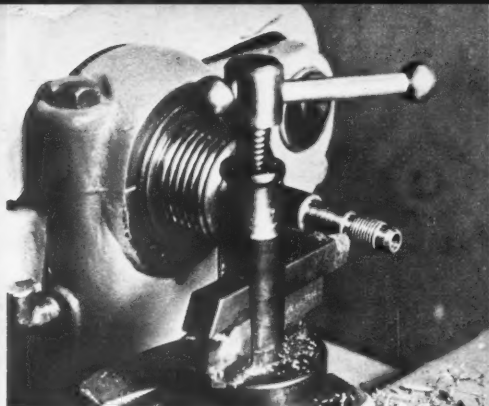
Three washers (Fig. 6) go under the thumb nuts, which screw on the trams and the adjustment stud (Fig. 7). A knurled nut (Fig. 8) fits in the slot of this stud and when turned, causes a filister-head screw, 2 in. long, to move in and out, carrying one of the trams with it. The needle-sharp points on the scribers (Fig. 10) are rough-turned with a carbolytipped tool and finished, while revolving in the lathe, with a fine India stone lubricated with kerosene.

For working on wood or paper, where a pencil line is desired, turn down a pencil stub and use instead of one scriber. •





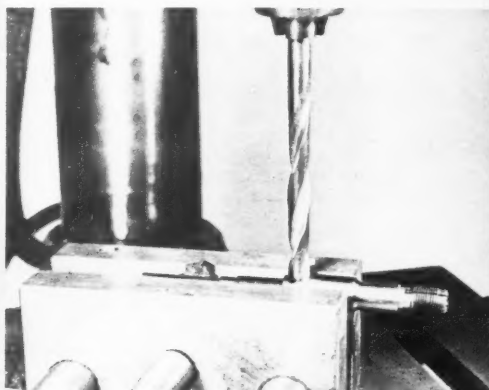
Clamp the 5/16x13-in. beam in your lathe and file the 3/16-in. flat, checking often with a micrometer to be sure of accuracy.



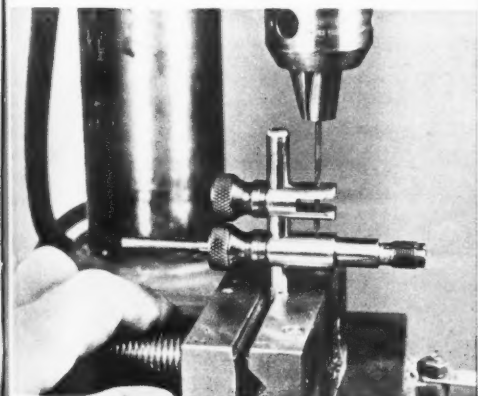
Turn the two trams from 1/2-in. stock, holding each piece in a 1/2-in. collet, as shown, or in a three-jaw chuck while turning and machining.



After each tram has been turned, chased, drilled, and reamed, clamp in a vise and saw the four 1/32-in. slots in the chuck.



Each tram must now be mounted in a drill vise to have a 5/16-in. hole drilled and reamed in it to take the 5/16-in. beam in a close, sliding fit.



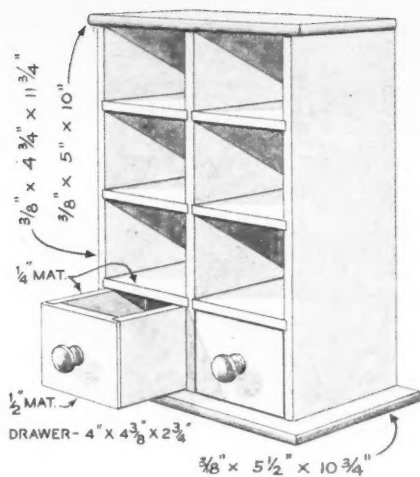
When spotting and drilling the adjustment-screw hole, mount one of the trams and the adjustment stud on a scrap of beam stock.



Make the adjustment stud from 1/2-in. stock and, using a hacksaw and a file, cut a 3/16x91/8-in. channel in the end that has the larger diameter.



Old-Fashioned Spice Box. To simulate an antique appearance, make this decorator's prize out of old, salvaged wood. The knobs may be either purchased or turned on a lathe. Assemble the drawers in the conventional manner, rabbeting the

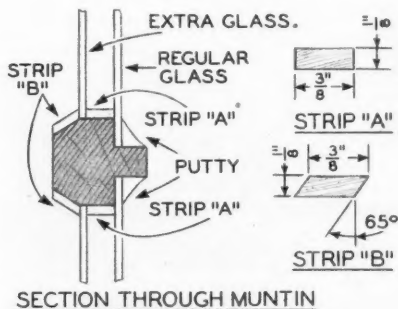


faces to take the sides and securing with glue and brads. Put the case together as shown, again using glue and brads. Set all brads, fill the brad holes, and thoroughly sand; then apply several coats of boiled oil and two of paste wax.

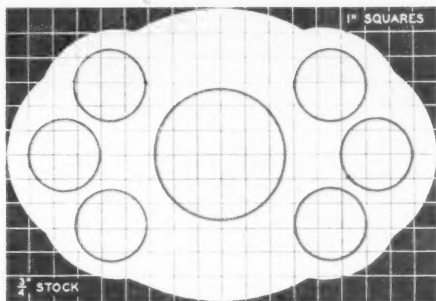
WEEKEND



Cut Heating Bills by double-glazing your windows instead of installing storm windows. If weatherstripped, double-glazed windows are as efficient as storm windows—and much more convenient. Putting up and taking down of storm windows is avoided and a double-glazed window can be opened in the normal manner for ventilation. The new panes of glass are held by wooden stripping that's secured with 1/4-in. No. 1 flathead screws.



SECTION THROUGH MUNTIN



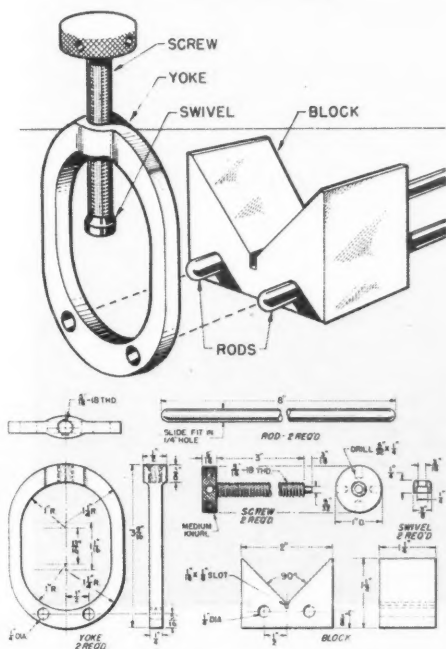
Tray-Coaster Combination. No rim is needed on this tray—it has coaster-lined recesses for six tumblers and a pitcher. Make the tray from $\frac{3}{4}$ -in. hardwood and the coasters from tin screw-top jar lids.

After jigsawing the tray to shape, lay out circles for the recesses. Bore a hole through the rim of each circle. Setting the jigsaw table at a $2\frac{1}{2}^\circ$ angle, saw out the disks. You now have seven taper-sided disks and seven tapered holes. Spread glue on the

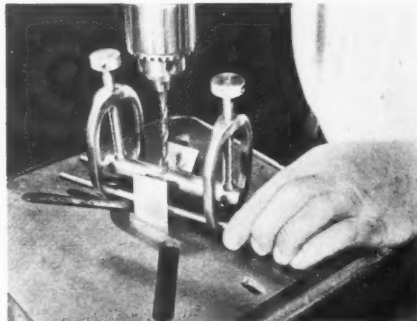
edge of each disk and tap it into its corresponding hole. The disks will go part way through the holes, forming recesses on one side of the tray and feet on the other side. When dry, sand and finish with shellac and wax.

Paint the coaster tins with quick-drying enamel and place a decal transfer in the inside bottom of each.

PROJECTS



Versatile V-Block. This V-block is as useful as it is unconventional. It can be used singly or in pairs, with or without clamps, and will handle work up to 2 in. in diameter. You can use mild steel to make it, although many workers will prefer tool steel. All machining can be done on a lathe and a drill press. Inside dimensions should be accurate, but outside dimensions are not critical. With abrasive cloth, lap the rods to a smooth, sliding fit in the block and yoke holes.





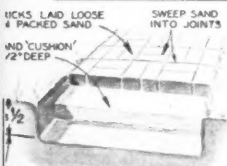
"BRICKLAYING,"

says MI Guy, "Is easy if you know these basic principles."

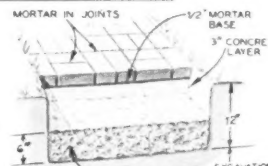
By Robert Scharff



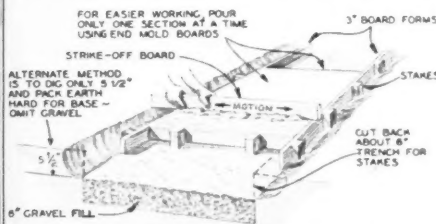
THIS PLEASANT WALK CAN BE MADE IN SEVERAL EASY WAYS--



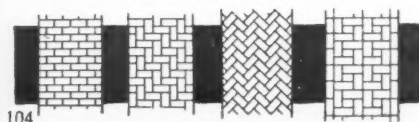
EXCAVATION
-- SAND BASE WITH SAND JOINTS FOR SOFT AND LIGHT WALKING



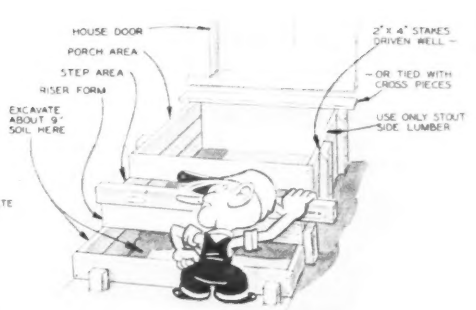
EXCAVATION
-- CONCRETE BASE WITH MORTAR JOINTS FOR CONSTANT AND HEAVY TRAFFIC



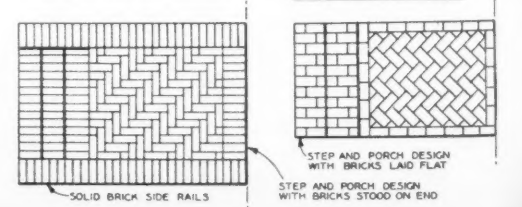
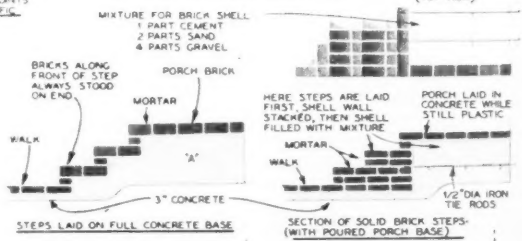
PREPARING MOLD AND CONCRETE BASE FOR MORTARED BRICK



A FEW TYPICAL WALK DESIGNS WITH PRACTICAL, SIMPLE LAYOUTS, WHICH ARE EASILY AND QUICKLY PUT DOWN



MIXTURE FOR BRICK SHELL
1 PART CEMENT
2 PARTS SAND
4 PARTS GRAVEL



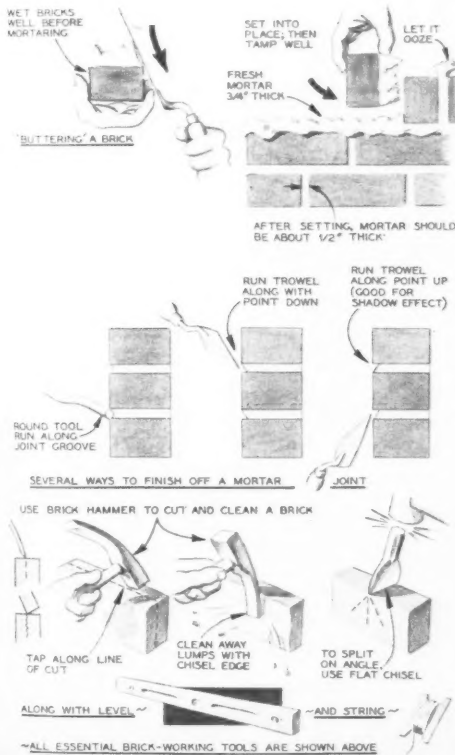
Brick walls, terraces and porches are practical as well as beautiful. The average homeowner who is handy with tools can easily produce pleasing and permanent improvements with brick. Walks and terraces may be laid in one of two ways, either on a sand base with sand joints or on a concrete base with mortar joints. The sand method is recommended for those who prefer a walk or terrace to be slightly irregular, perhaps with grass growing between the bricks. To make this type walk, excavate the entire area to a depth of about 3½ inches below the surface. Then, cover the bottom of the excavation with 1½ inches of sand carefully leveled so as to form a smooth surface. Lay the bricks flat on the sand according to the pattern desired. Then fill the spaces between them by placing a layer of sand on the walk and sweeping it into the joints with a broom. Spraying the walk with water will help to pack the sand.

If a more rigid or regular surface is desired, a 3 inch concrete base is recommended. After laying out the walk on the ground, dig a trench 12 inches deep and

about 1 foot wider than the width of the walk. Put 6 inches of gravel or cinders into the trench, level and tamp it down well and then set the two side form boards (see illustration) in place. A mix consisting of 1 part cement, 2 parts sand and 4 parts gravel should now be poured into the form and leveled off. After the mix is leveled off place the bricks directly on the concrete while it is still wet. The joints may be filled with a dry mixture of sand and cement and sprayed with water, if a smooth top brick is used, or a thin mortar (1 part cement to 1 part of sand) poured into the joints and then tooled flat.

A more economical method is to pack the sub-grade ground thoroughly, apply a base mixture of damp sand and cement, mixed in the proportions of 3 parts sand to 1 part cement, levelling off to 2½ inches below the finished grade of the brickwork. Lay the bricks in the pattern desired, spray lightly with water and fill the joints as described above. Regardless of the method used, number one hard common brick suitable for

(Continued on page 148)



Above: Making an outside wall for steps. Bricks should be wet for best results. Below: Aligning the first step. A level, straight edge and string—plus a bit of patience—will produce a good looking and lasting job.



hunters: make your own

GOOSE DECOY



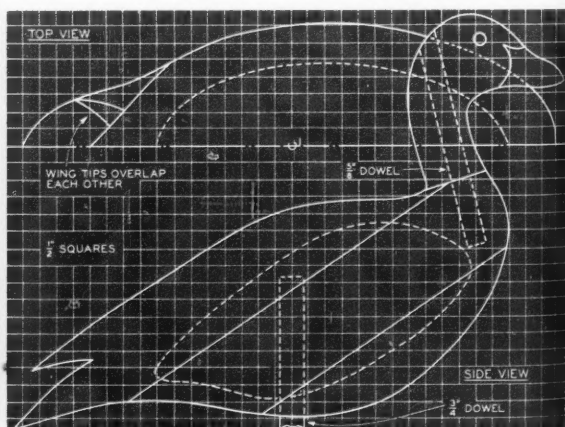
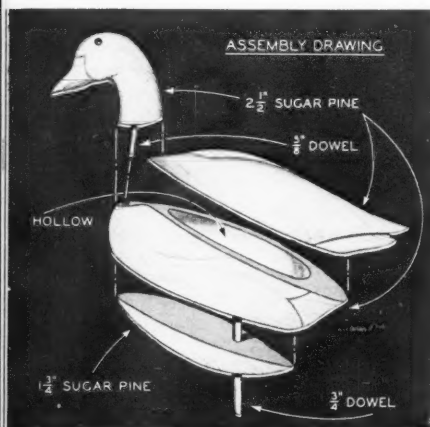
By Hank Bradshaw

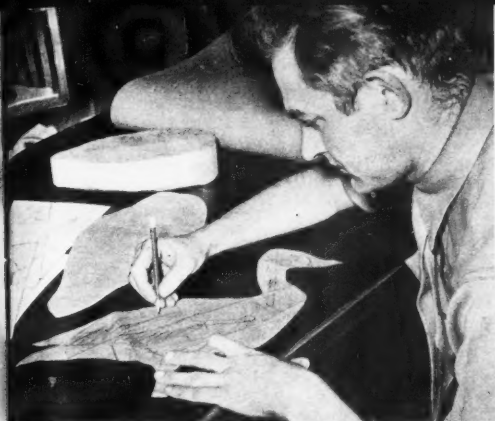
ARE you prepared for the hunting season, with plenty of decoys on hand? If not, now's the time to go off on a carving binge. Jack Musgrove, an official of the Iowa State Museum, shows here the steps necessary to make a goose decoy. One of these jobs, painted to resemble a snow goose, took first prize recently in a contest held at the National Sportsmen's Show in New York City. By following Musgrove's procedure, you can produce your own decoys in any quantity desired—and, by varying the dimensions and finish slightly, you can model any kind of goose or duck.

Musgrove recommends that you use the pattern given below to make from six to 12

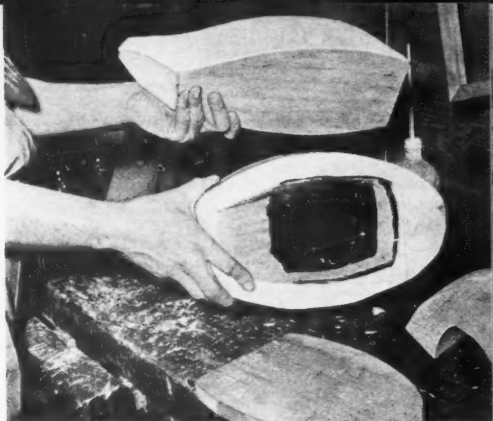
decoys and that you paint half of them to resemble blue geese and the other half to simulate snow geese. Then you'll be all set for any type of shooting—field, bar, or water. An alternative system you might try would be to make three or four full-bodied decoys, such as are depicted here, and a number of silhouette-type decoys. The full-bodied lures will prevent geese from losing sight of your spread when directly over it, which they might do if silhouettes were used exclusively.

Use any easily carved softwood. Musgrove prefers dry sugar pine about 2½ in. thick. When you paint, it isn't necessary to be too finicky about detail. •





On paper laid out in $\frac{1}{2}$ -in. squares, make full-size patterns of the top and side views. Use the patterns as a guide when roughing out the stock.



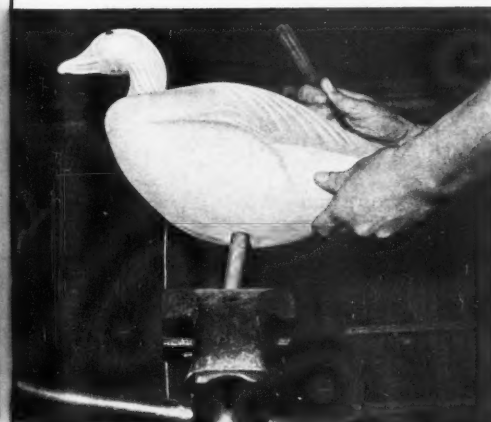
From sugar pine or similar softwood, bandsaw the four rough sections that will become the goose. Chisel out body center, leaving 1-in. sidewalls.



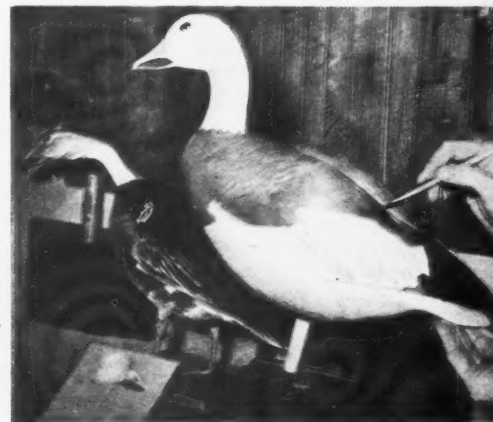
Assemble body sections with synthetic-resin glue, clamp until dry, remove clamps, and cut roughly to shape, employing a drawknife and a wood rasp.



Bore a $\frac{3}{8}$ -in. hole through head into body (at an angle to prevent head twisting on its axis), fit a dowel in the hole, and glue head in position.



Chisel and whittle goose to finished proportions, set glass eyes in plastic wood in recesses in the head, and add removable peg in underside of body.



Sand thoroughly, apply two coats of linseed oil to waterproof, and finish with common artists' oils mixed with turpentine to give dull surface.



DORENA-A 26-Ft. Motorsailer

PART III

*Here is the rest of the dope
for all you windjammers on
Luther H. Tarbox's beautiful
little sailing-cruising boat.*

THE main and cockpit decks are double-planked, the inner skin being of $\frac{3}{8}$ -in. waterproof plywood and the outer skin of $\frac{3}{8}$ -in. mahogany, white pine, Port Orford cedar, or Douglas fir. Care must be taken that butt joints in the inner skin do not line up with seams in the outer skin. Fasten the inner skin to the deck beams and sheer battens with $\frac{3}{4}$ -in. No. 7 flathead screws or 1-in. 12-ga. Stronghold boat nails on 4-in. centers, luting the faying surfaces with resorcinol synthetic resin. The outer skin is bedded in liquid marine glue. First, fit the covering boards, which are 6 in.

wide and must be spiled to shape; then lay the 6-in. king plank. All deck strakes are 3 in. wide and run parallel with the centerline. Fasten through inner skin into deck framing with 2½-in. No. 18 flathead screws on 3-in. centers around the edges and 2½-in. No. 18 flathead screws or 2½-in. 8-ga. Stronghold boat nails on 3-in. centers into beams and carlings.

The cockpit sides and ends are of ⅝-*in.* waterproof plywood. The lower edges are set in rabbeted sills of 1½x1¾-*in.* white oak, mahogany, or Douglas fir, which are bedded in liquid marine glue and secured to the cockpit beams with ¼-*in.* bolts on 4-*in.* centers. Backing pieces of 1x1½-*in.* white oak or Douglas fir are fitted at the corners of the cockpit to support the sides and ends. Lute all plywood faying surfaces with resorcinol synthetic resin. Fasten plywood to sills, backing pieces, main-deck beams, and carlings with 1¼-*in.* No. 9 flathead screws on 3-*in.* centers. A face piece of ½x3½-*in.* mahogany, white pine, or Douglas fir is fitted around the upper edge of the cockpit and fastened with 1¼-*in.* No. 9 flathead screws. The edge of the main deck around the cockpit is covered with a ⅝x2-*in.* mahogany, white-pine, or Douglas-fir cap, similarly fastened. Lute these faying surfaces with liquid marine glue.

The raised-deck planking is ¾x3-*in.* white pine, Port Orford cedar, cypress, or Douglas fir. Fasten to deck beams with 2-*in.* 8-ga. Stronghold boat nails, two to each strake, and at ends, around deck edge, and around hatch openings with 1½-*in.* No. 10 flathead screws on 3-*in.* centers (two to each deck strake at ends). These fastenings are all to be countersunk and puttied; then the deck is to be planed and sanded smooth. Cover the raised deck with 10-*oz.* canvas bedded in liquid marine glue. Turn the edges of the canvas down under the half-round moldings around the deck and up behind the hatch sills, where it is covered by the hatch face pieces. Fasten the edges with ¾-*in.* copper tacks on 2-*in.* centers.

Make the bulwark caps of 1¼x4-*in.* mahogany, white oak, or Douglas fir. A knee of the same material as the caps is scarfed into their forward ends. Lute the faying surfaces with resorcinol synthetic adhesive and fasten to bulwark battens and clamps with 2-*in.* No. 16 flathead screws on 4-*in.* centers, counterboring for the heads and plugging with bungs set in liquid marine glue. The transom cap is of the same material and thickness as the bulwark caps and has knees at the corners, which are

scarfed into both transom and bulwark caps.

The engine beds are 2¼-*in.* white oak, longleaf yellow pine, or Douglas fir, molded and shaped as shown. Those shown in the plans are for the Gray Seascout engine and will have to be modified to suit the three other engines specified for power. They must be fitted before the hull is planked. Jog them down over the floor timbers as indicated and through-fasten with ⅝-*in.* square-head bolts, setting the heads flush in square recesses and taking up the nuts over heavy washers in round counterbores set deep enough in the tops of the engine beds so the nuts and bolt ends are below the upper edges of the engine beds. The forward ends of the beds are secured to Bulkhead 4 with ½x1½x1½-*in.* bronze or brass angles through-fastened to the beds and bulkhead with ⅜-*in.* bolts of the same material as the angles.

The hanging knees on frame 7 are 1-*in.* straight-grained white oak, longleaf yellow pine, western larch, or Douglas fir, molded and shaped as shown. Fasten to the deck beam with ¼-*in.* bolts and to the raised-sheer frame with 1¾-*in.* No. 14 flathead screws after luting faying surfaces with resorcinol synthetic resin.

The chain-plate and port-light fillers are ⅜-*in.* waterproof plywood fastened to the inside of the planking or bulkheads after luting.

All hatches are of mahogany, white oak, or white pine. The tops are 1 *in.* thick, the sides are 1¼x1¼ *in.*, and the sills are 1½x1½ *in.*, bedded in liquid marine glue and through-fastened to the deck beams and carlings with ¼-*in.* bolts. The companionway hatch is to be built as per plans. The companionway drop boards are 1-*in.* mahogany, white pine, or Douglas fir; the sill and slides are of the same material. Lute faying surfaces with resorcinol synthetic resin and secure with 1¼-*in.* No. 9 flathead screws.

The rudder blade is made up of three 1½-*in.* pieces of mahogany, white oak, longleaf yellow pine, or Douglas fir. Fasten the pieces together with ¼-*in.* and ⅜-*in.* drifts, counterboring for the heads and plugging. The blade tapers to a ⅜-*in.* trailing edge. The cheek pieces are of the same material, 1¼-*in.* thick, molded and shaped as shown. They taper to ⅜-*in.* thick at the bottom. Lute the faying surfaces with resorcinol synthetic resin and through-fasten to the blade and each other with ¼-*in.* bolts. Note that the blade is cut away in way of the tiller to form a tenon. The heel pintle and strap fitting are de-

tailed in the plans. The upper pintles and gudgeons are standard 1½-in. products.

Use 1½x1¾-in. locust, white oak, or ash for the tiller. The after end is rectangular to fit into the rudder-head socket. Round off the stock neatly ahead of the socket.

Make the chain plates as detailed on the plans, bed them in Miracle Adhesive or liquid marine glue, and fasten through hull with ¼-in. square-head bolts. Fit heavy washers under the nuts inside the hull and wind a strand of glue-soaked cotton wicking under each washer for a waterstop. The gammon iron, bobstay fitting, and crane are detailed on the plans.

The gallows frame is 1¼x6-in. mahogany, white oak, or Douglas fir, shaped as required. Halve the cross piece into the legs, luting the faying surfaces and fastening with 1-in. No. 8 flathead screws. The legs are secured to the deck with ½x1½x1½-in. bronze or brass angles, which fasten to the legs with ¼-in. bolts and to the deck with 1¾-in. No. 12 flathead screws. The braces are ¾-in. i.p.s. Everdur or bronze pipe with the ends flattened and bent as required. Secure them to the frame and deck with ¾-in. bolts.

The sheer molding is 1½x2-in. mahogany, white oak, longleaf yellow pine, or Douglas fir, tapered to ¾-in. thick on its outboard edge. The inboard edge is beveled as required and tapered as indicated at the ends. Fasten to sheer with 3-in. No. 20 flathead screws on 4-in. centers, counterboring for the heads and plugging with wood bungs set in liquid marine glue. Cap the molding with ¾-in. half-oval brass secured with 1-in. No. 8 oval-head screws on 6-in. centers.

The raised-sheer molding is 1¼-in. half-round mahogany, white oak, or Douglas fir. Fasten it to the hull with 1½-in. No. 6 flathead screws, counterboring for the heads and plugging with wood bungs set in liquid marine glue. Lute the faying surfaces before securing.

The handrails are 2x2-in. mahogany, white oak, or Douglas fir, shaped as indicated. Fasten them to the deck beams with 3½-in. No. 22 flathead screws, counterboring for the heads and plugging with wood bungs in liquid marine glue. Lute the faying surfaces with liquid marine glue.

Keep the cabin joinerwork as simple as possible. The flooring is 7/8x4-in. white pine, Port Orford cedar, or Douglas fir. Fit the flush hatches indicated in the plans to give access to the bilge. Fasten to floor timbers and floor ledges with 1¾-in. 10-ga. Stronghold boat nails or 1¾-in. No. 10 flathead screws. Ceil the hull with ½x4-in.

white pine or Douglas fir with 1-in. air spaces between strakes. The ceiling in way of the icebox is ¾-in. waterproof plywood. The berth fronts and tops, the clothes-locker bulkheads, the low bulkhead on the starboard side between the forward cabin and the galley, the galley dresser front, the icebox bulkheads, and the hinged seat over the watercloset are also ¾-in. waterproof plywood. The chart-table and galley-dresser tops are 5/8-in. waterproof plywood. The locker-door panel is of the same material in a suitable rabbeted frame. Frame up the berths, galley dresser, and icebox with 1¼-in. white oak or Douglas fir. Fit rabbeted mahogany or Douglas-fir corner posts and moldings at the low bulkhead between the galley and the forward cabin and at the inboard ends of the clothes-locker bulkheads. The faying surfaces of all plywood paneling that does not require removal for future maintenance should be luted with resorcinol synthetic resin. Fastenings may be either Stronghold nails or flathead screws.

The companionway steps are 7/8-in. mahogany, white pine, or Douglas fir, molded and shaped as shown.

The icebox insulation may be either Armstrong Foamglas blocks, bedded in Miracle Adhesive or hot pitch, or Fiberglas bats. Ceil the inside of the box with ¼-in. waterproof plywood or Weldwood Armormply, which has a stainless-steel surface on one side. If you use plywood, add a lining of 20-ga. Monel or stainless steel bedded in Miracle Adhesive. Fit a 20-ga. Monel or copper drain tank under the ice compartment and add a suitable drain and shutoff cock.

The cockpit seat fronts are 5/8-in. waterproof plywood set in 1½x1½-in. mahogany, white oak, or Douglas fir rabbeted sills. Fasten and lute faying surfaces as described for the cockpit sides and ends. Fit a 1x1-in. stiffener along the outboard top edge of each seat front and similar vertical stiffeners at the ends. The fuel tanks, which are detailed on the plans, rest on 1x1-in. square chocks, four under each tank. The seat tops are ¾-in. mahogany, white pine, or Douglas fir and are hinged to swing up. Chock the fuel tanks securely across their tops to make sure that they cannot shift.

The fresh-water tank is detailed on the plans. Install it and secure firmly in place with 1¼x1¼-in. chocks.

The galley fittings are simple. The dish lockers are ¾-in. waterproof plywood. Fit a glass rack of ¾-in. mahogany where shown. The stove is a two-burner Primus.

ir
y
d.
-
-
e
n
t.
at
-
-
d.
-
e
x
it
er
d
n
-
of
re
e
n.
s

-
d

r
n
s
n.
-
n
g
n
r
-
d

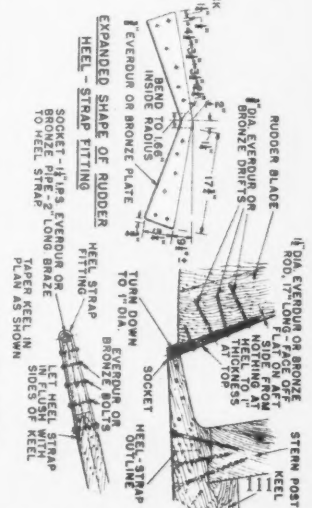
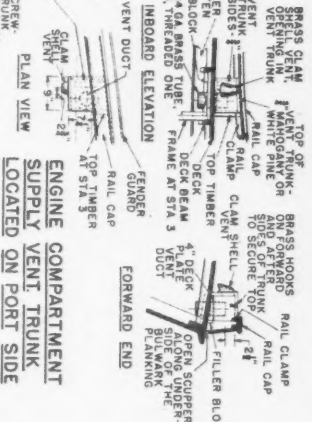
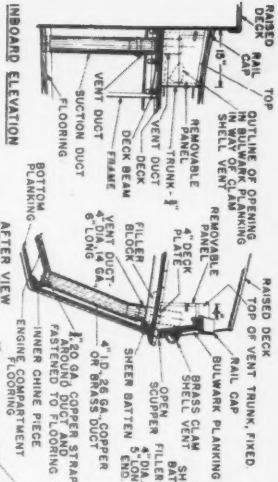
-
-
d
s
s.
d
r
el
t
h
y.
d
y
y

e
e

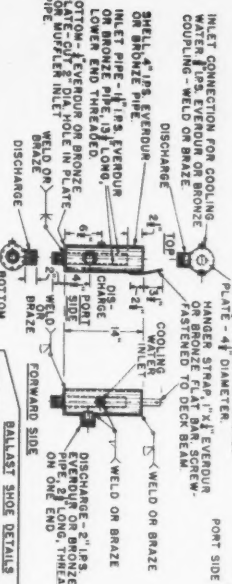
n
t
e
s.

d

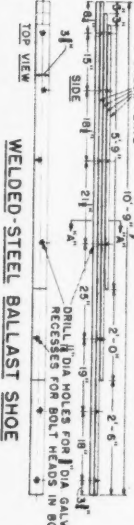
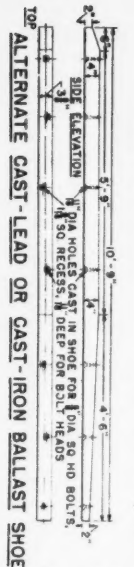




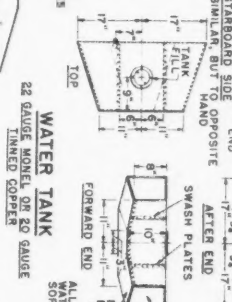
ENGINE COMPARTMENT EXHAUST VENTILATOR TRUNK - LOCATED ON STARBOARD SIDE



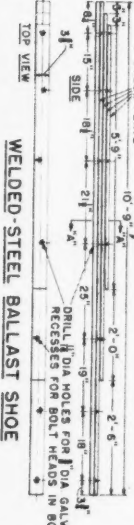
'STANDPIPE' EXHAUST MUFFLER



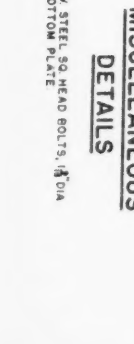
ENGINE COMPARTMENT SUPPLY VENT TRUNK LOCATED ON PORT SIDE



WATER TANK



FUEL TANKS



MISCELLANEOUS DETAILS



LARGE-SCALE PLANS

and Bill of Materials will greatly simplify construction. Send \$5 to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Conn. Please specify Plan No. B-163.

Fit 20-ga. Monel or stainless-steel flashing over $\frac{1}{8}$ -in. asbestos heat-insulation board aft of the stove to prevent heat from charring the bulkhead. The sink is enameled steel and measures $10\frac{1}{2}\times 16$ in. The drain is $1\frac{1}{2}$ -in. lead pipe leading overboard just above the waterline. Fit a $1\frac{1}{2}$ -in. bronze seacock in the drain at the hull. The galley pump shown is one of the "angle" type and is connected to the freshwater tank with $\frac{3}{8}$ -in. i.p.s. Everdur or copper pipe. Fit a bronze check valve in the line close to the tank.

Fit a Seaclo Junior watercloset under the seat between the berths. Line this space with 20-ga. Monel or stainless-steel sheet. The supply line is $\frac{3}{4}$ -in. lead pipe and has a bronze seacock at the hull. The discharge line is $1\frac{1}{4}$ -in. lead pipe and also has a bronze seacock at the hull. In way of all seacocks, fit a 1-in. reinforcing block of white oak, longleaf yellow pine, or Douglas fir, bedded in Miracle Adhesive or liquid marine glue and fastened to the planking with $1\frac{1}{4}$ -in. No. 9 flathead screws driven from outside. Under each seacock, fit a canvas gasket that has been soaked in liquid marine glue.

Install the Navy-type bilge pump on the galley dresser front where shown. The suction line is $1\frac{1}{4}$ -in. i.p.s. Everdur or copper pipe, fitted with a bronze strainer at the suction end. The overboard-discharge line is $1\frac{1}{2}$ -in. i.p.s. Everdur or copper pipe. Fit a $1\frac{1}{2}$ -in. bronze seacock at the hull in this line.

The port in the after cabin bulkhead and the two in the weather bulkhead at the forward end of the raised deck are 6 in. in diameter. Get the type without outside finishing rings. The ports in the sides of the cabin are oval. The after two on each side are 5×9 in. and the forward one on each side is 4×7 in. Fit canvas gaskets soaked in liquid marine glue under all flanges and screw-fasten to the hull.

The stern bearing and stuffing box are threaded to take $1\frac{1}{4}$ -in. i.p.s. Everdur or bronze. A shaft alley, $1\frac{3}{4}$ in. in diameter, must be bored through the stern post, deadwood, and apron to take this shaft tube. Use a barefoot ship's auger and a proper jig to steady the auger, as explained in Chapelle's

Boatbuilding. Cut the shaft tube to the right length and thread both ends. Smear the inside of the shaft alley with liquid marine glue and install the shaft tube. Fit canvas gaskets soaked in liquid marine glue under the flanges of both stern bearing and stuffing box. Thread on these fittings and secure with bronze lag screws at least 4 in. long. The sizes given for stern bearing and stuffing box are correct for the Gray Seascout only. The other specified engines require $1\frac{1}{8}$ -in. stern bearing and stuffing box, although the shaft tube remains $1\frac{1}{4}$ -in. i.p.s.

Each of the four specified engines will drive *Dorena* at 7 knots. The Gray Seascout with 2:1 reduction gear will take a two-blade bronze propeller, 20-in. diameter and 13-in. pitch. This should be either a Michigan MP or a Columbian Dynetic wheel. The Kermath Sea Cub with 2.06:1 reduction gear will take a two-blade propeller, 15-in. diameter and 8-in. pitch. The Universal Utility Four with $2\frac{1}{4}$:1 reduction gear will take a two-blade propeller, 20-in. diameter and 12-in. pitch. And the Universal Atomic Four with 3.06:1 reduction gear will take a two-blade propeller, 20-in. diameter and 13-in. pitch. Check with the engine manufacturer on shaft size and direction of rotation before ordering the propeller.

Reverse-gear and throttle controls are installed in the after end of the cockpit. Use standard fittings and Everdur or bronze pipe and shafting.

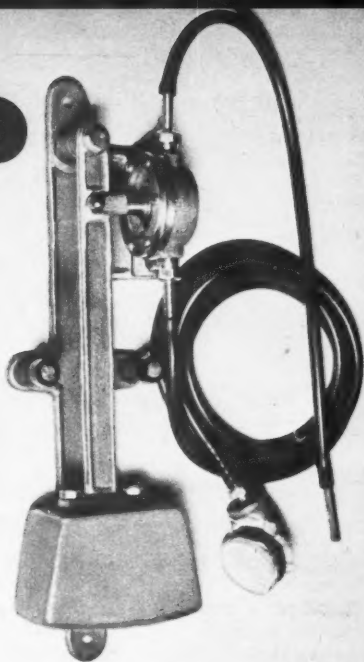
The "Standpipe" exhaust muffler is detailed. Pipe sizes indicated are correct for the Gray Seascout only. All the other engines have $1\frac{1}{4}$ -in. i.p.s. exhausts; so the lines should be reduced to $1\frac{1}{4}$ and $1\frac{1}{2}$ -in. i.p.s. Use Everdur or copper pipe throughout except for the muffler itself. The thwartships discharge line should have short lengths of steam hose and bronze through-hull connections fitted at its ends. All cooling-water discharge from the engine must be piped to the muffler. Lag the exhaust line between engine and muffler with 1-in. asbestos rope and cover with asbestos tape. Support discharge line with bronze straps. Wrap several layers of asbestos tape around the line in way of each supporting strap to serve as both heat insulator and a vibration damper.

The fuel tanks are cross-connected with a $\frac{3}{8}$ -in. copper line. Fit a packless-type shut-off valve in the line at each tank and suitable packing glands around the line where it passes through the cockpit deck. Connect this line to the engine, using compression fittings. [Continued on page 134]

NEW for the BOATMAN

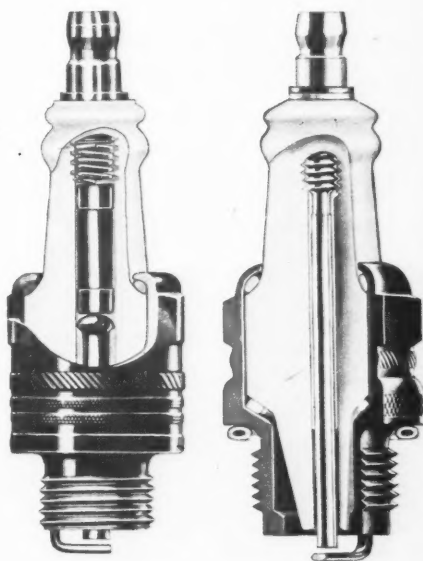
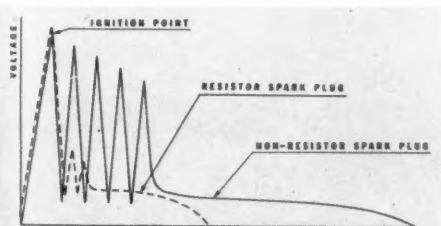
"Little Squirt" is what Fred C. Meacham, of Garden City, N. Y., calls this automatic bilge pump, which he has recently placed on the market. It doesn't use any electricity, but is made to operate by the normal rocking motion of a boat at anchor. Even a very slight movement is sufficient to cause the weighted pendulum to swing, working the plunger that activates the diaphragm valve. Since most boats are continually rolling and bobbing about, the pump works practically all the time.

It occupies a space about 3 in. deep, 4 in. wide, and 12 in. long and requires no attention other than that necessary to keep the strainer clean and to apply an occasional drop of oil to the pendulum bearing. Under normal mooring conditions, it will pump out about 30 gallons a day. With the exception of the pendulum weight, it is made of bronze. The retail price is \$22.50. With this pump, you'll be able to step aboard your boat any time and find it dry.



Resistor Plugs almost entirely eliminate engine-induced interference in radio-telephone sets aboard boats. Manufactured by the Electric Auto-Lite Company, these new plugs, which cost but little more than ordinary ones, cut down to a practically inaudible level that buzzing, distracting noise, not unlike a Bronx cheer, that's so familiar to radio-telephone-owning boatmen.

The "secret" is a 10,000-ohm carbon resistor that's built into each plug. This resistor cancels out the lingering spark impulses that make miniature radio transmitters of ordinary plugs. The resistor plug develops as hot a spark as the ordinary one, but "cuts off" the spark, as shown below, almost immediately.

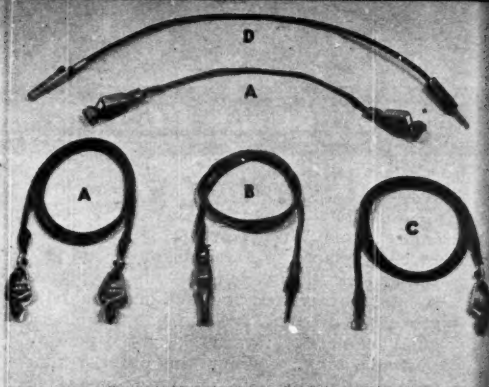


RESISTOR PLUG

ORDINARY PLUG



Keep Test Equipment such as meters, on a short shelf over the workbench where it is accessible yet out of the way of tools. Two brass fingers screwed to the shelf will prevent pulling the equipment off accidentally.

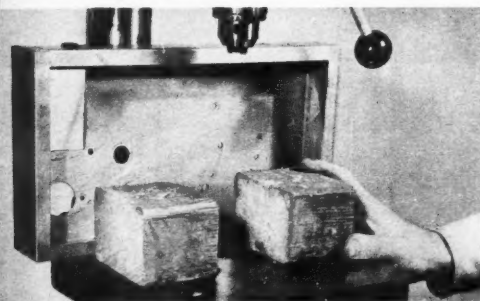


- A—Two Spring-Type Clips
- B—Phone-Tip Connector
- C—Soldering Lug
- D—Banana-Type Plug

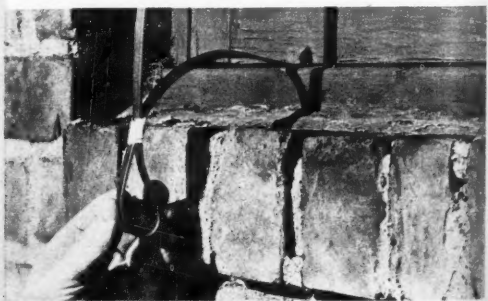
Flexible Leads fitted with clips and other connectors are invaluable for making test connections. Use random lengths of insulated flexible wire and wrap with tape close to each connector to prevent insulation from unraveling.

SHORT CUTS

Proper Support when drilling a chassis is furnished by a couple of scraps of wood that are slightly thicker than the depth of chassis. These will prevent the chassis flat from "giving" and not taking the cutting edges of the tool.



Twin-Conductor Wire in television-aerial lead-ins acts also as a conductor of rain. To keep water out, form a loop, using adhesive tape, as shown. Apply more tape to the wire where it crosses the frame to protect it from the window itself.

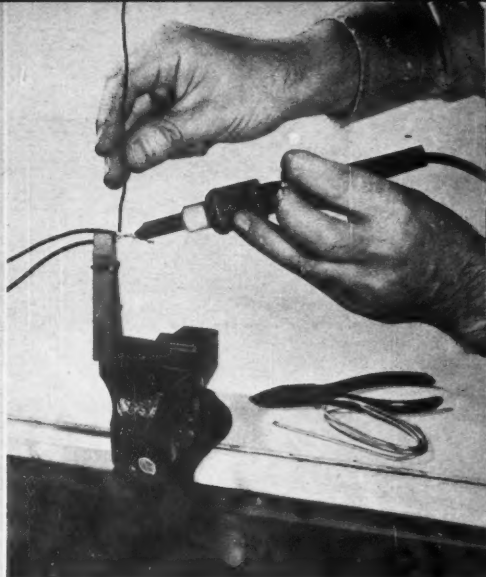




"Simplest" Test Set.

consisting of earphones and a flashlight battery connected in series, will locate most of the troubles with radio parts. Touch the wires to a suspected part to find out if it is burned out or shorted.

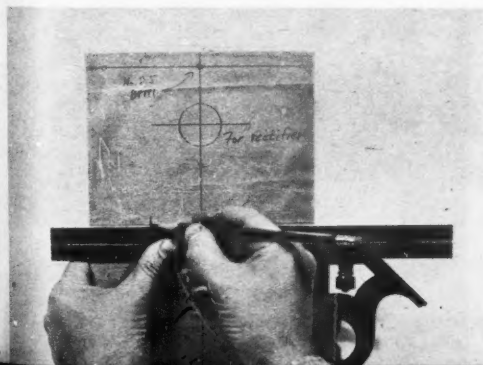
By Robert Hertzberg



A Wooden Clothespin

makes an ideal "third hand" for awkward soldering operations. Don't use a metal clip—being a good thermal conductor, it'll rob the joint of heat. And avoid a plastic pin—it'll disintegrate with heat.

Hole Layout on an aluminum panel is a nuisance because the shiny surface produces distracting reflections. The job can be simplified by first covering the metal with brown wrapping paper. Tack it down with rubber cement and roll free of wrinkles with your fingers; then turn the panel over and trim off excess paper with a sharp knife. The panel is now ready for marking. Pencil lines show up perfectly, errors can be erased, and notations can be included. After drilling, the paper can be pulled off and the panel rubbed clean.



car care

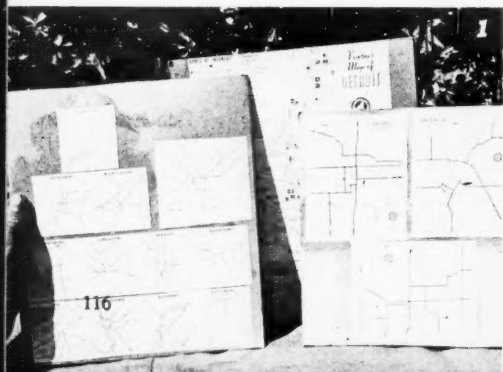


Photo by Robert Brightman

To figure the rear axle ratio of your car just mark the propeller shaft and count the number of turns it makes for one complete revolution of the rear wheels. For instance, if the shaft makes four turns, the ratio is 4 to 1. For cars with an enclosed propeller shaft, jack the rear wheels, put the car in high gear with clutch engaged, take out the spark plugs, switch off the ignition and count the number of turns of the motor for one complete revolution of the rear wheels. Watch the motor through the flywheel housing peephole or at the vibration dampener at the front end.

Worn universal joints often are indicated by a sharp squeak or a click when accelerating from low speeds.

- 1** Town maps printed on back of most road maps are best utilized when cut out and mounted on cardboard.
- 2** Poor oil mileage may be due to clogged crankcase vents. Pressure builds up and forces oil out as mist.
- 3** Never, except in case of an emergency, use pliers as a wrench. Here a nut is being badly chewed up.
- 4** Disk brakes may very well be the latest thing in motoring. Centrifugal action keeps them clean.



behind the wheel

With
Fred Russell

For a personal reply, please enclose a self-addressed, stamped envelope.

My 1939 Chevrolet has a grinding noise when I release the clutch in low and second gears. Is it my clutch? Alfred Marks, Upper Darby, Pa.
Your trouble seems to indicate worn countershaft gears. Do not believe the clutch is at fault.

What causes my 1946 Ford to jerk slightly at 30 mph and sometimes at lower speeds? Happens mostly when motor is hot. Asher Kaiser, Lansdowne, Pa.

Your symptoms point to sticky valves. Try some Castrol, Rislone or Siloil with the crankcase oil.

Is there anything that can be done to Kaiser-Frazer motors to make them idle slowly or is fast idling a characteristic of high compression engines? James Allen, Belleville, Mich.

No, it is not. Merely adjust the carburetor idling set-screw; while at it check the ignition timing.

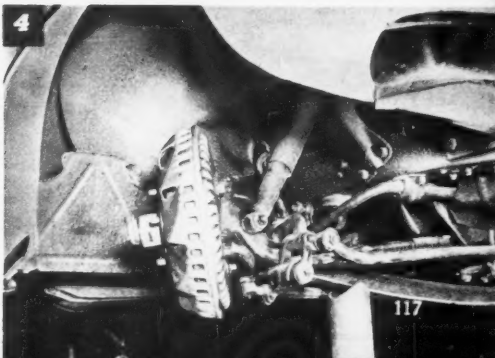
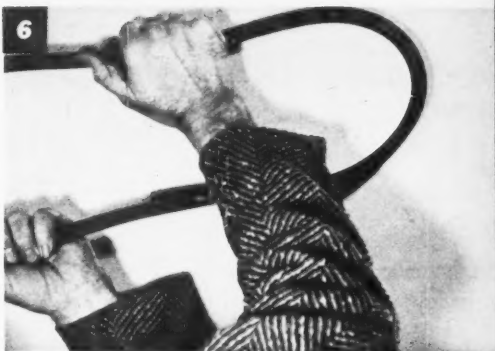
I have a 1940 Nash on which the clutch is always slipping. The flywheel housing always appears to be covered with oil. A. F. Schmitt, Pompano Beach, Fla.

The oil is evidently passing into the clutch housing through the rear main bearing. Get a new oil seal. Incidentally, these seals vary for different Nash cars, even of the same year. Check with a reputable parts supplier.

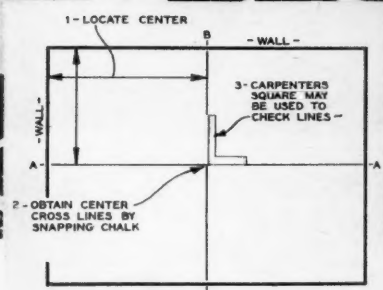
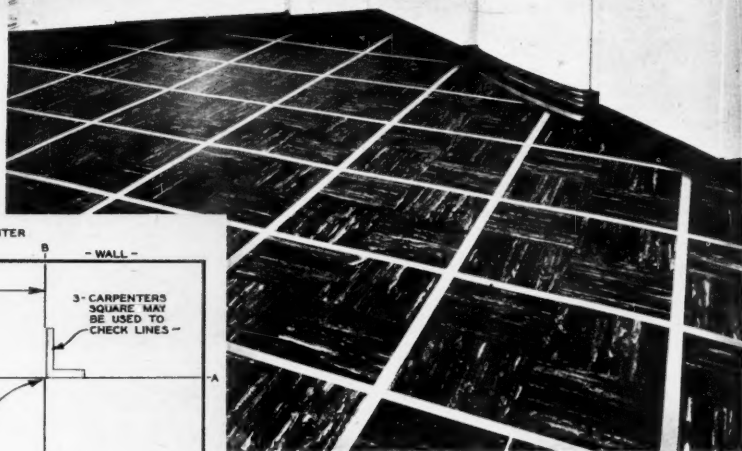
5 Poor windshield wiper operation is often due to improper contact between glass and blade. Check the tension of the spring-loaded arm.

6 A new fan belt will fit better and stretch less if you limber it up before installation. Adjust for 1 in. play after it has been in use for few days.

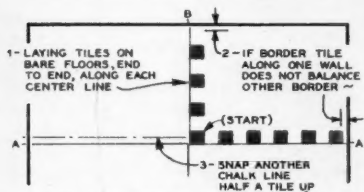
7 Underinflation will cause excessive tire wear. Always use valve caps. Have them finger-tight only. Make certain caps have gaskets.



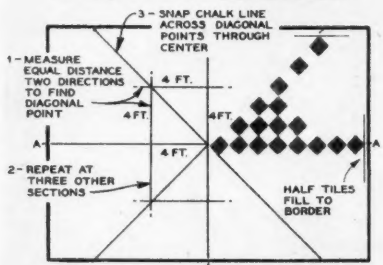
how to lay ASPHALT TILE and LINOLEUM



TILES MUST BE STARTED SQUARE TO END UP SQUARE. CHALK LINES A & B MUST BE AT EXACT RIGHT ANGLES



THIS IS PROCEDURE FOR SIMPLE CHECKERBOARD LAYOUT. IF BORDER IS USED, CHECK FOR BALANCE AS SHOWN



118

IF YOU PREFER DIAGONAL-LAID TILES, DIAGONAL COURSE LINES MUST BE ESTABLISHED AS HERE

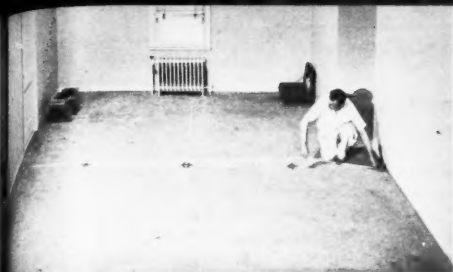
Now you can have floors in patterns limited only by your design ability.

By Robert Scharff

TIME was when the floor of a house was just a floor. Today, however, thanks to the attractive tiles and linoleums now available, a floor can be decorative as well as functional. The common types of flooring that can be installed by the homeowner come in a number of different sizes, with many colors in both solid and variegated patterns, making for possibilities limited only by your ability as a designer.

Before laying either linoleum or tile on wood, the surface must be sanded to a uniform smoothness. If the wood is too rough or uneven, $\frac{1}{4}$ -in. plywood or fiberboard should be installed over it. Under no circumstances should either tile or linoleum be laid over wood floors that are subject to rot, such as those that are laid below grade or those that don't have adequate ventilation

Mechanix Illustrated



Lay the room out into four sections by snapping chalk-line center lines at right angles to each other, checking angle with a carpenter's square.



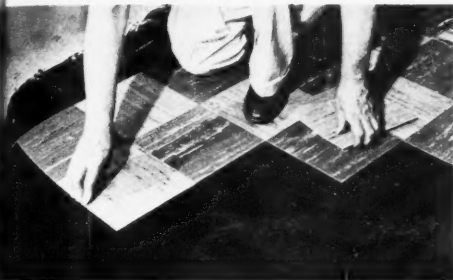
Set a half row of tile in place. This will show the space left for a border. If the border will be too narrow, move the row one-half tile over.



When applying adhesive, spread each blob over as great an area as possible. Bear down on trowel so only adhesive oozing through notches remains.



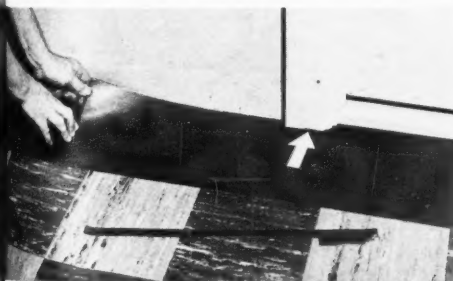
Start putting down the tiles at the center point, laying the first tile in the corner formed by the intersection of the two chalk lines, as above.



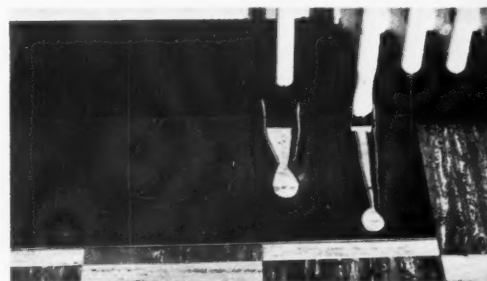
Lower each tile carefully into adhesive. Never slide one into place as this will push adhesive up between tiles, throwing rows out of register.



To cut a border to fit a door molding, pencil in the shape of the cut, heat the back of the tile until pliable, and make cut with linoleum knife.



Here's a length of molding being set in place at a door after having been cut as described above, right. The waste piece lies in the foreground.



Never set a radiator right on flooring material as heat will soften it. Instead, make cutouts, as shown, so border fits snugly at the radiator.

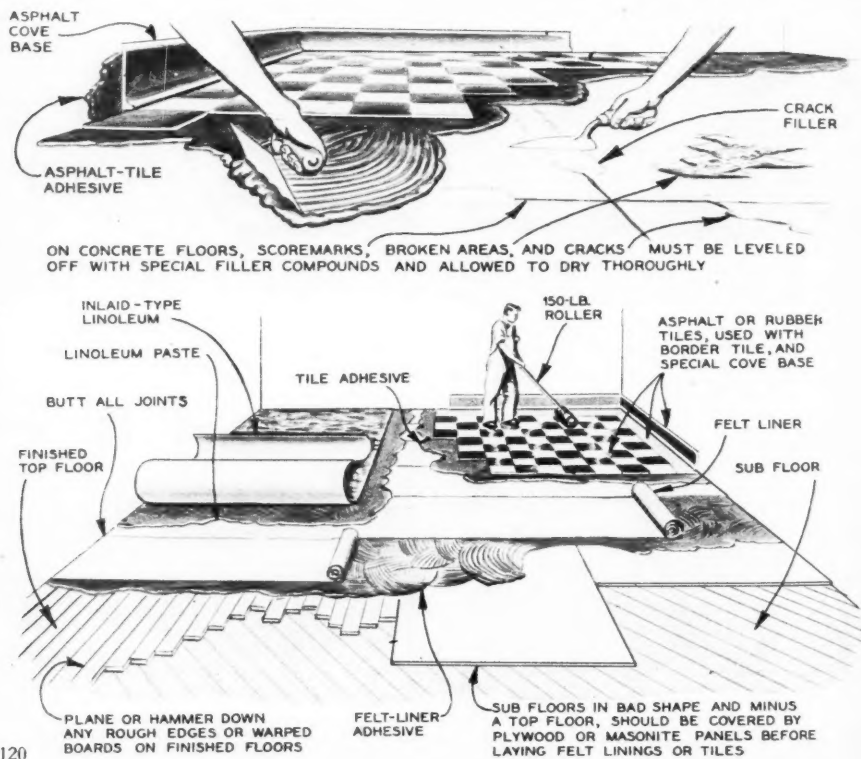
from beneath. On concrete basement floors, only asphalt tile is generally recommended. Above ground, linoleum, rubber, or cork can be used if the concrete is thoroughly dry. Moisture, even in small quantities, will eventually lead to the decomposition of these flooring materials. A simple test to determine whether or not concrete is dry can be made by laying pieces of linoleum at several places on the floor and putting weights on them so they will have uniform contact with the surface. If, after 24 hours, moisture appears on the bottoms of the test strips, the concrete isn't dry enough.

Concrete floors must be smooth and clean. Paint must be removed from surfaces in direct contact with the ground. To accomplish this, dissolve the paint with a caustic-soda or industrial-lye solution, wash it down with a strong muriatic-acid solution, and rinse it thoroughly with clear water. Or you can grind off the paint with a sanding machine, using a coarse paper and sweeping carefully afterwards. Expansion joints and score marks should be filled with a material recommended by the manufac-

turer of the floor covering you are going to use.

When installing linoleum or asphalt tile, a minimum temperature of 70° must be maintained before, during, and after the application of the material. Before laying flooring, the floor must be squared. There is no such thing as a perfectly rectangular room. Imperfections in construction, settling, contraction, and expansion all create irregularities that throw room dimensions out of true. And many rooms have alcoves, offsets, and other breaks in the floor area. To overcome these variables, it is necessary to lay out center lines at right angles, using a chalk line and a carpenter's square, as shown in the accompanying illustrations. After finding the center, measure the room, arrange the design, and estimate the quantity of material required.

To lay material such as *Kentile*, spread tile cement evenly over half the floor, using a notched trowel; allow the adhesive to dry until tacky; then install the tile, starting at the center and working to one side, then to the other. Cut the border tile to fit the



wall and lay it. Lower the tiles into the adhesive—never slide them into position as this will force the adhesive up. When laying marbled or grained tile, place it so the pattern in adjacent tiles runs in opposite directions.

Asphalt tile can be cut to fit irregularities in walls if heated first with a blowtorch. Always apply the heat to the back of the tile and, to avoid blistering, heat slowly.

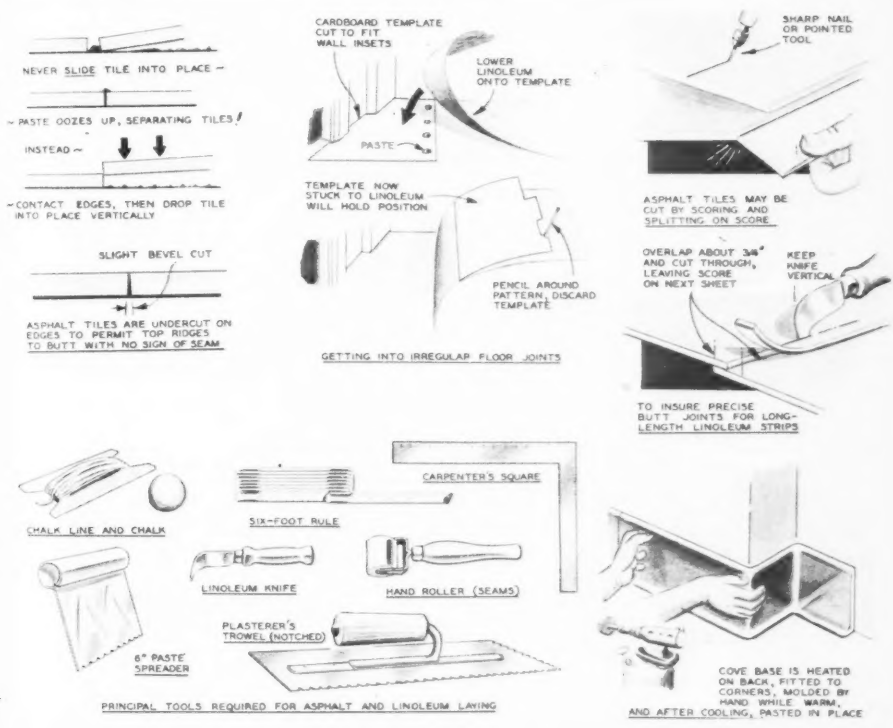
To remove spots of adhesive from the surface of the tile, use a putty knife, then rub with a soapy cloth. If this fails to remove all traces, use 00 steel wool, but never attempt to use gasoline or other solvents such as benzine or turpentine.

An asphalt base cove can be used instead of a wood molding. The first step in its application consists of fitting all corner pieces, both inside and outside. Heat the backs with a blowtorch and cut partially through the material; then position against the wall and shape to fit while still warm. Allow to cool and, in outside corners, round off with a light grade of sandpaper. Let stand in position without adhesive and proceed to fit

the straight pieces. Once all pieces are fitted, cement in place.

Modern methods of laying linoleum insure perfect and lasting joints and seal the edges firmly against moisture. When felt-backed linoleum is used, it is laid directly on the prepared floor. If the linoleum is not felt-backed, a felt base should first be laid. The linoleum must be cut to fit door moldings and other irregularities. A piece of light cardboard can be used as a template, as shown in one of the drawings.

After the linoleum has been cut to size, cement is applied evenly to the floor, a few square feet at a time, and the linoleum is pressed firmly down on it. The entire surface must be well covered with adhesive. To make a neat, workmanlike seam, a double cut is used. Lap the edges of the linoleum $\frac{3}{4}$ in. and snap a chalk line $\frac{3}{8}$ in. in from the edge of the top sheet. Cut completely through the top sheet into the bottom one. Remove the top sheet and cut the under sheet along the scored line. The knife blade must be kept at a true 90° angle to the floor if the [Continued on page 136]



"ICHABOD"

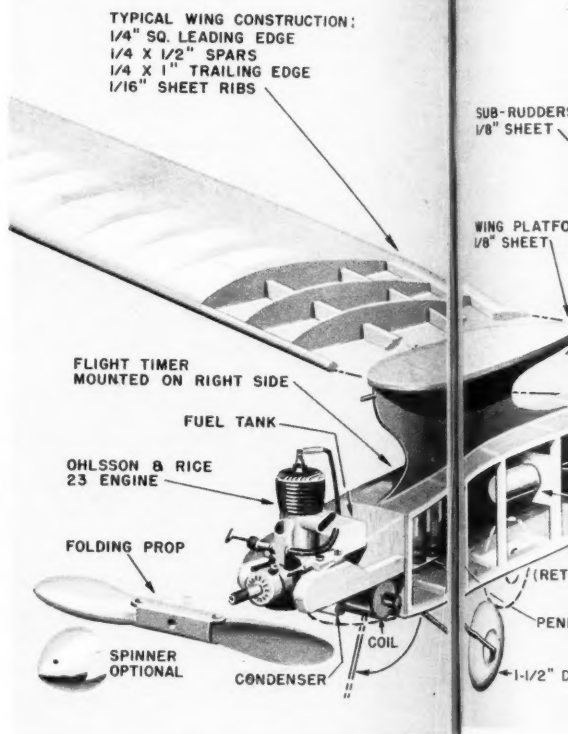


Ever see a 5-ft. gassie with a "23" power plant climb like a rocket? Then build this Class B free-flight winner.

By Stinson Smith

WHEN the Academy of Model Aeronautics rules for 1948 came out there immediately developed two schools of thought among free-flyers. One group declared that the large, super-gliding floater was the answer to high power loadings. The other group, stating that a glide was no good without altitude to start it, clung to the fast climbing jobs of 1947. Actually, neither the floaters nor the high climbers are good under all conditions. When there are no thermals present the rocket climbing jobs come down almost as fast as they go up, and the floaters often have a hard time getting high enough to catch a thermal when there are some. Obviously the answer lay in a fast climbing floater which could out-glide the rock-climbers and out-climb the floaters.

A model airplane's wing contributes a major portion of the plane's total drag because of the very low Reynold's number at which models operate. With this fact in mind, I decided to try a large floater type job with a "streamlined" wing which would



allow
thin.
which
can cli
climbe
some
floater
rotary
slightl
climbs
circles
Unfor
duces
glide.
bad ab
if the
and he
Icha
of spin
not al
Ichabo
see a
though
If you

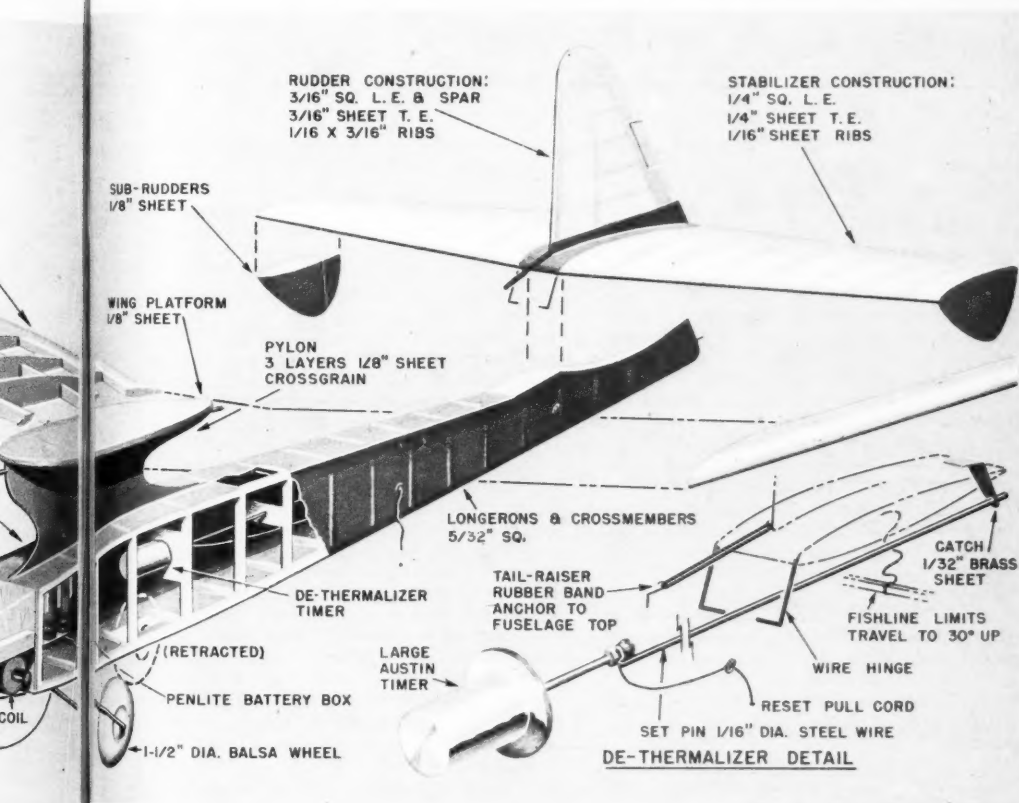
allow the ship to climb rapidly. I chose the thin, flat-bottomed Clark Y 09 section which is the secret of "Ichabod." Ichabod can climb almost as fast as the small rocket climbers and can glide just as flat, though somewhat faster than the conventional floaters. The original ship, powered by a rotary intake Ohlsson and weighing slightly more than the required 23 ounces, climbs with amazing speed in rather wide circles, and glides in fairly tight circles. Unfortunately, the thin wing which produces the fine climb also produces a fast glide. There is nothing aerodynamically bad about the glide, but damage can result if the ship connects with something solid—and how many models don't have mishaps!

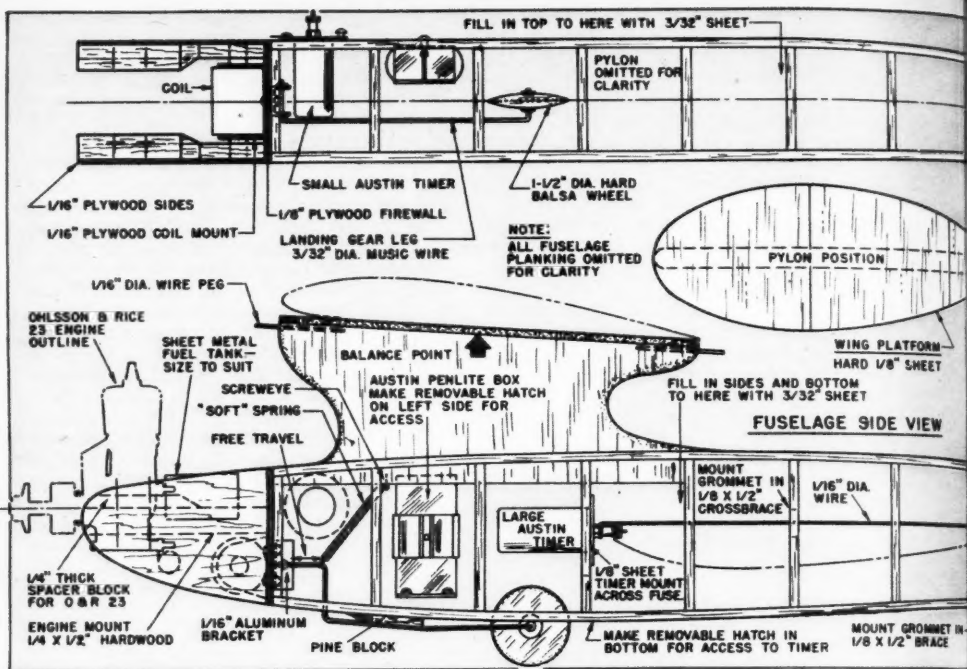
Ichabod has more than the usual amount of spiral stability. It will loop, however, if not allowed to turn in the climb. Try an Ichabod. You'll be pleasantly surprised to see a 5-foot, 440 square inch job climb as though it had twice the power of a 23 in it. If you like, Ichabod may be flown in Class

B and C interchangeably. Simply add eight inches to the center of the wing, two inches to the center of the stabilizer, and use a Torpedo 29 and 32 or a Forster 29 and 305 interchangeably.

The basic frame is constructed of $\frac{5}{32}$ in. sq. very hard balsa. After the sides have been made and joined by the uprights, cut the firewall from $\frac{1}{8}$ in. birch plywood and cement it in place at the nose. Bend the landing gear bracket from .040 aluminum, drill the necessary holes, and bolt it to the firewall. Bend the landing gear strut from a piece of $\frac{3}{32}$ in. music wire and slip it into the bracket. Solder a washer to the strut on either side of the bracket to hold the strut in place. Use a $1\frac{1}{2}$ in. balsa wheel and solder a washer on either side of it.

Fill in the right side of the fuselage with $\frac{3}{32}$ in. sheet and mount the timer and battery box as shown. Wire up the battery box and timer, extending the wires through the firewall to be connected up to the coil and ground later. Now make the pylon of three





laminations of hard $\frac{1}{8}$ in. balsa. Run the grain of the center layer fore and aft and the grain of the outer layers up and down.

While the pylon is drying, select a large Austin timer for the dethermalizer. Pick one that will run about 15 minutes consistently. Mount the timer on a piece of $\frac{1}{8}$ in. sheet and cement in place. Now cement small grommets in pieces of $\frac{1}{8} \times \frac{1}{2}$ in. and cement in place in the rear half of the fuselage. These grommets serve as a guide for the dethermalizer pushrod and prevent it from buckling. Mount a large eyelet in a piece of $\frac{1}{8} \times \frac{1}{2}$ in. in the right side of the fuselage. Tie and cement a piece of heavy fish cord to the timer adjusting knob and extend it out through the eyelet just mentioned. Drill a hole through the rear of the fuselage to fit a piece of $\frac{1}{16}$ in. I. D. tubing. Glue the tubing in the hole and install the wire pushrod. The wire is clamped to the timer between the brass lock nut and the adjusting knob. Cut the wire so that it just disappears inside the tubing at the rear when the timer is all the way in.

Carve and sand the pylon to a streamlined shape, notch the bottom to fit over the fuselage crossmembers, and cement it in place. The top of the pylon is made of $\frac{1}{8}$ in. sheet balsa with the grain running spanwise. Cement the $\frac{1}{16}$ in. music wire pegs

into the front and rear of the pylon. Fix a small screw eye into the bottom of the pylon as shown and install the landing gear retracting spring. The spring should be just tight enough to hold the gear in the up position. Finish filling in the nose of the fuselage, leaving a hatch on the left side for access to the battery box and one on the bottom for the dethermalizer. These hatches may be hinged with silk or may be held in place with Scotch tape. Cement a small pine block to the bottom of the fuselage to allow the gear to retract without hitting the bottom planking.

Cut the side cowls for the nose from $\frac{1}{16}$ in. mahogany plywood and butt-join them to the firewall. The $\frac{1}{4} \times \frac{1}{2}$ in. bass mounts are cemented to the side cowls and butt-joined to the firewall. The method seems weak at first, but has proven to be stronger than any other way. This type mount has withstood hard crashes in both free flight and control line models. Just make sure that the mounts fit squarely and use plenty of cement. After the mounts are dry, apply a heavy fillet of cement all around them. Some engines, such as the Ohlsson 23, do not mount on the thrust line and will require spacer blocks. Make these to the size necessary and cement them in place on top of the mounts. [Continued on page 138]

ALL FUSELAGE LONGERONS, CROSSMEMBERS 5/32" SQ.

BLOCK BALS
STABILIZER MOUNT

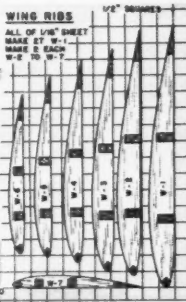
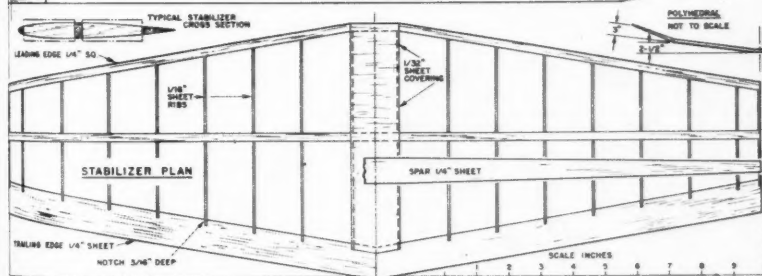
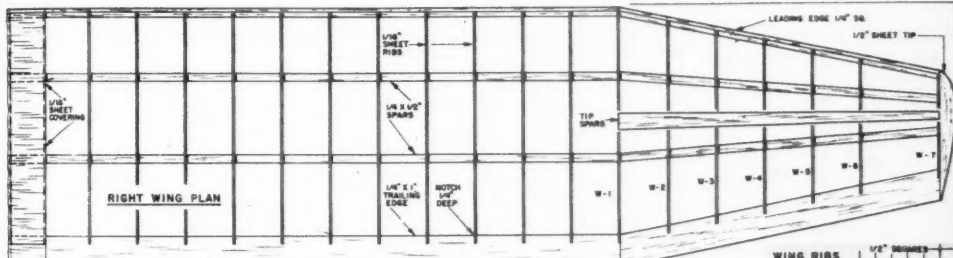
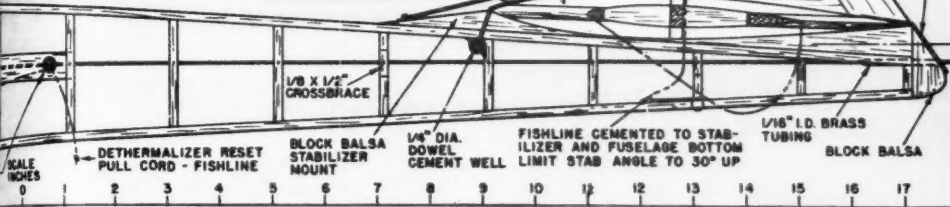
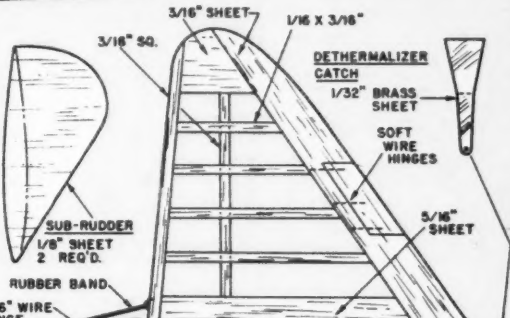
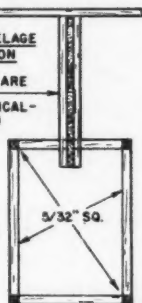
DESIGNED BY STINSON E. SMITH JR.
TRACED & INKED BY S. CALHOUN SMITH

FUSELAGE
TOP VIEW

TYPICAL FUSELAGE
CROSS SECTION

PYLON LAMINATIONS ARE
1/8" SHEET - OUTSIDE
LAYERS, GRAIN VERTICAL -
INSIDE LAYER, GRAIN
FORE AND AFT

STABILIZER HINGE DETAIL

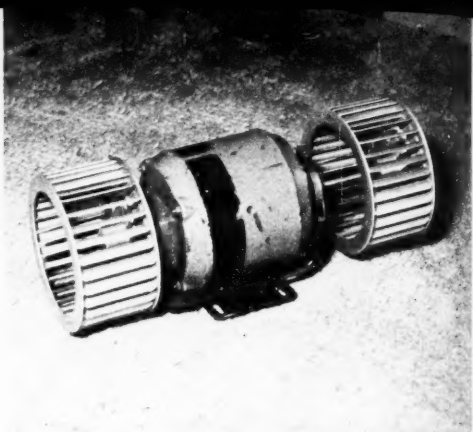


FULL SIZE PLANS

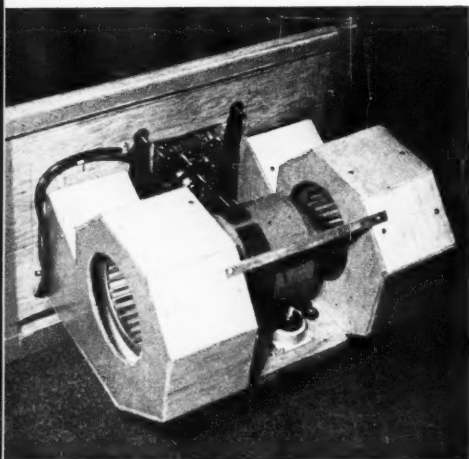
of Icabod will save you hours of work and insure an accurate model. Send 50 cents for your set today. Address: MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Connecticut. Specify Plan No. 406.



Addition of an automatic timer will permit the ventilator to go on for any length of time within a 12-hour period. The wiring diagram is on the next page.



Use a double shaft, continuous duty motor; 1/20th hp is enough. Blowers are standard 6x3 in. cages available for clockwise or counter-clockwise shafts.



The assembly of the motor and blower wheels. One of the wheels should be placed fairly close to the motor so that it will serve to keep it cool.

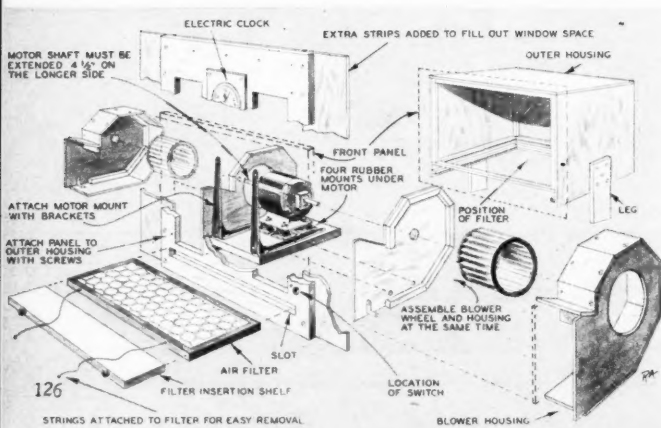
Automatic Ventilator

By David Fidelman

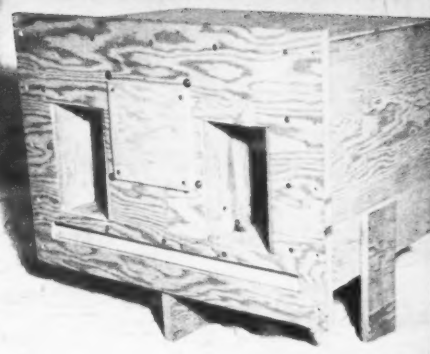
INSTEAD of tossing sleeplessly in a hot bedroom, you can sleep in comfort after you have made and installed this ventilator. It will completely change the air in the average size bedroom or living room every four or five minutes, regardless of the presence or direction of the prevailing winds. Since other windows need not be opened when it is in operation, outside noises are shut out, and the shades may be drawn to keep out light if the unit is used in a bedroom. A Fiberglass filter which is used with the ventilator removes all dust and other impurities from the air, thus assuring relief to pollen sufferers as well as keeping out external dust.

The ventilator operates by means of two pressure type blower wheels driven by a motor. A housing around each blower wheel causes it to draw in air through the center of the wheel and blow it through the opening in the housing. This type of blower is known as a "centrifugal blower."

The motor is mounted



Mechanix Illustrated



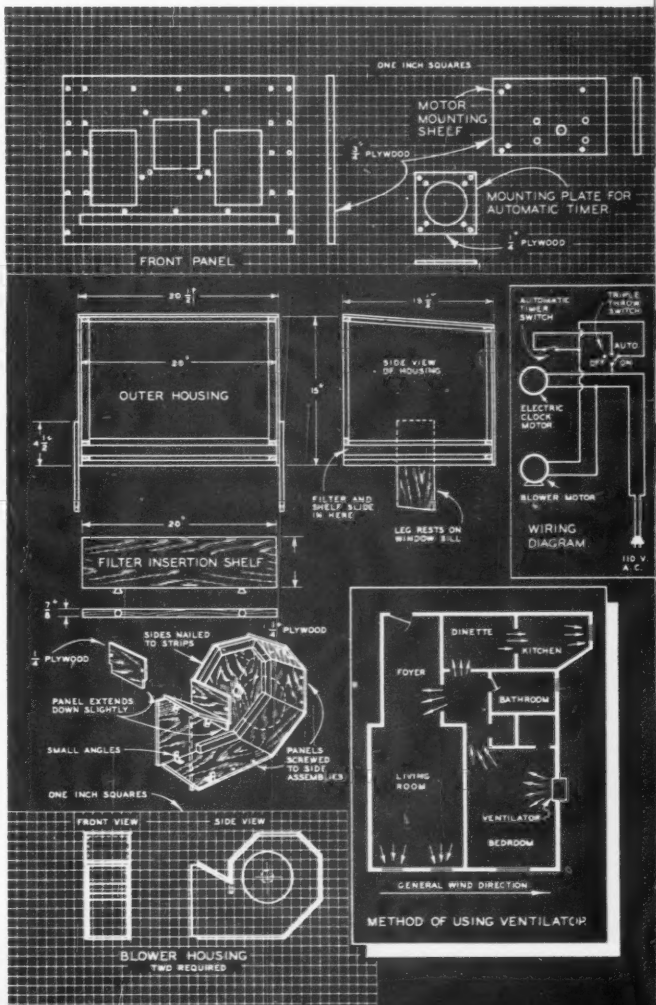
Front panel and motor mounting shelf consist of $\frac{3}{4}$ in. plywood. Use $\frac{1}{4}$ in. plywood for rest of housing and $\frac{3}{4}$ in. wood strips for stiffening braces.

Weatherproof the ventilator with two coats of spar varnish. The panel facing inwards may be finished or painted to match existing bedroom furniture.

on four rubber mounts to prevent any vibration from being transmitted. In assembling the unit, the first step is to mount the motor without the blower housings and then mount the wheels. The entire motor-blower assembly is supported from the front panel by two 8x10 in. shelf brackets which fasten the motor mounting shelf to the front panel.

The outside housing for the ventilator holds the air filter, prevents air from entering anywhere except through the filter, and protects the entire unit from the elements. The filter slides into position between the guides in the outer housing. When the unit is assembled the filter is inserted and changed by means of a slot in the front panel. A small shelf is then inserted after the filter to close the openings completely so that air enters only through the filter. Two strings are attached to the filter to facilitate its removal when it needs

[Continued on page 138]





Monthly Photo Contest

1 First Prize—Ironmonger
A \$10.00 check goes to
Phillips St. Claire of
N. Y. C. for this in-
teresting flash shot.



2 \$5.00 Award—River
View. Taken by Robert
Browning of Texas City,
Texas. Exposed on Su-
per XX, 1/500th at f-16.

3 \$5.00 Award—Youth
A combination print
from two negatives by
Wellington Lee of N. Y.
C. Press camera; pan.



4 \$5.00 Award—Archway
Tom Toy of the Yonkers
Camera Club used a
2 1/4 x 3 1/4 camera for
this study; Super XX film.

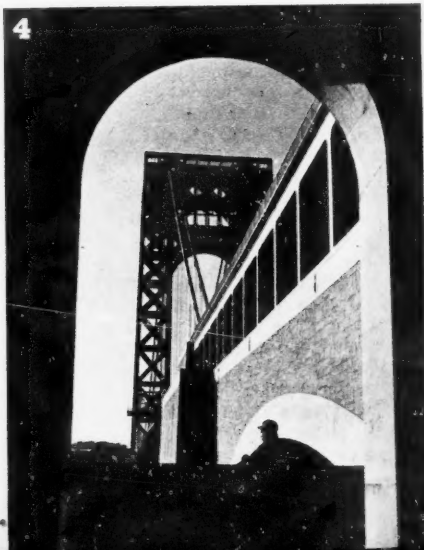


PHOTO CONTEST RULES

Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Address: Monthly Photo Contest Editor, MECHANIX ILLUSTRATED, 67 W. 44 St., N.Y.C.



A gooseneck desk lamp makes a fine adjustable tripod for table top work if the socket is removed and a $\frac{1}{4}$ "x20 bolt fitted to engage the camera.

photo shorts

question box

by Robert Brightman

Can I use a 13cm., f-8 lens for enlarging? Erwin Matheny, Boomer, W. Va.
Yes, it will cover a negative up to $3\frac{1}{4}$ "x4 $\frac{1}{4}$ " in.

What is the proper use of a viewing filter? Charles Seggie, Baltimore, Md.
Monochromatic viewing filters are generally deep blue in color. Their chief use is not to determine how the different colors will register, but to ascertain what areas are in shadow.

What type of color film should I use to photograph fireworks? Keith Gorden, Anderson, Ind.
Use Type A or Type B film.

What is wrong with the enclosed negative? David Radtke, Milwaukee, Wis.
It has been very badly fogged during the developing process; you are using an improper safelight or else its light is much too strong.

How can I find the focal length of a camera lens? George Koufolexin, Westfield, Mass.
You can determine the focal length by holding the lens in the sun so that the image of the sun is projected as a sharp white area on a piece of paper. The distance from the middle of the lens to the paper is the focal length.



By checking your meter against the same flashlight (always equipped with fresh batteries) you can readily determine if it is still up to par. Test in contact with lens.

Collapsible aluminum drinking cups can be altered for use as sun shades by cutting out the bottom and bending tabs to fit the outside diameter of your lens. See photo below.



SPOTLIGHT

with your
Slide Projector



Two floods are for general illumination. Slide projector, on bookcase, serves as a spotlight.

IT is easy and simple to convert a slide projector into a spotlight. The only materials required are some cover glasses and binding tape, such as are used to bind Kodachrome slides; some black paper; a pair of scissors and a compass or some coins.

Cut the paper into 2-in. squares. In the center of one of them place a dime and draw a line around the coin. Take the scissors (small curved fingernail scissors preferred) and cut out the circle in the center of the square of paper. Cut as carefully as possible, for any irregularities will be exaggerated when the projector is used as a spot.

Repeat with a nickel, quarter, half-dollar and dollar. Now, bind each of the pieces of paper between two cover glasses, the way miniature film slides are mounted. When one of these slides [Continued on page 140]

Slide projector, modified as described in the text, was the only light used to take this picture.

130

Photos by Jack Wright

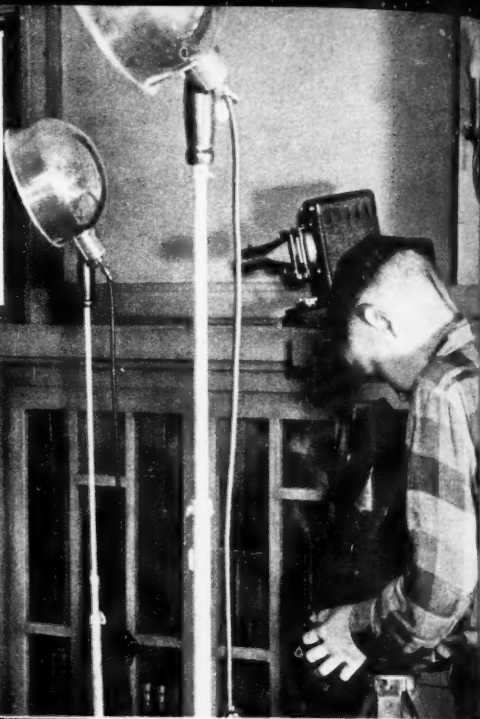


Table top work is especially effective when a spotlight is used as part of the lighting set-up.



foolproof rangefinder

By Walter E. Burton

WITH four pieces of metal and three screws, you can construct a rangefinder that will surprise you with its accuracy. Its construction is so simple that every owner of a camera that must be focused by scale can easily add it to his collection of accessories. It may be used with still or movie cameras.

This distance meter makes use of the angle the photographer's [Continued on page 142]



This simple, inexpensive rangefinder will be surprisingly accurate for distances up to about 100 ft. Table below shows the angle to which the eye is depressed when viewing base of objects at various distances and from different eye heights.

TABLE OF ANGLES*

Eye Ht.	4'2"	4'4"	4'6"	4'8"	4'10"	5'	5'2"	5'4"	5'6"	5'8"
Ft.	100	2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3
75	3 1/4	3 1/2	3 1/2	3 1/2	3 1/2	4	4	4	4	4
50	5	5	5	5 1/2	5 1/2	6	6	6	6	6
30	8	8	8 1/2	9	9	9 1/2	10	10	10 1/2	10 1/2
20	11 1/2	12	12 1/2	13	13 1/2	14	14 1/2	15	15 1/2	16
15	15 1/2	16	16 1/2	17	18	18 1/2	19	19 1/2	20	20 1/2
10	23	23 1/2	24	25	26	26 1/2	27	28	29	29 1/2
8	27 1/2	28 1/2	29	30	31	32	33	33 1/2	34 1/2	35 1/2
7	31	32	33	34	34 1/2	35 1/2	36 1/2	37	38	39
6	35	36	37	38	39	40	41	41 1/2	42 1/2	43 1/2
5	40	41	42	43	44	45	46	47	48	49

* Figures in body of table refers to angular degrees.



All the parts; no lenses or prisms are used.

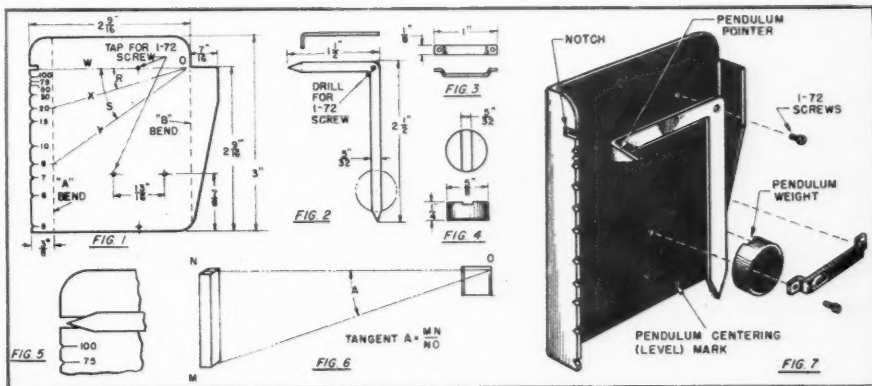




PHOTO STAMP PRINTER

By Kenneth Murray

PRINTING up to 100 stamp-size photographs on a single sheet of 8x10 in. paper is easy with the MI Printer. After processing, each sheet can be gummed on the back, and cut so that individual stamps are available for attaching to personal stationery, books and other possessions.

Printing can be done from any negative; the mask opening is $\frac{7}{8} \times \frac{7}{8}$ in. This leaves a narrow white border on each stamp. Without changing the guides, you can substitute a mask with an opening twice as large and print 50 exposures on each sheet.

The MI Printer is a complete unit and the exposure is made automatically each time the platen presses the photo paper into contact with the negative.

The device consists of a top piece fitted with paper guides; two wooden supporting rails; an illumination compartment, and a

hinged platen which operates a contact switch each time full pressure is applied.

A $19\frac{1}{2} \times 17$ -in. piece of $\frac{3}{8}$ -in. plywood or $\frac{1}{4}$ -in. black Tempered Masonite is required for the top. Round off one edge as indicated in the drawings, then cut a $1\frac{1}{8}$ -in. square hole in the center for the printing aperture with a jig saw. A small keyhole saw can also be used. Rabbet the edge of the opening so that it will accept a square of glass for a flush fit. A suitable piece of glass is that sold for mounting 35mm. frames for projection in a 2x2-in. projector.

The supporting side rails and illumination enclosure are positioned and glued to the underside of the top. One end of the enclosure remains open so that the flash of light from it can be seen and length of exposure accurately calculated. It may be covered [Continued on page 140]



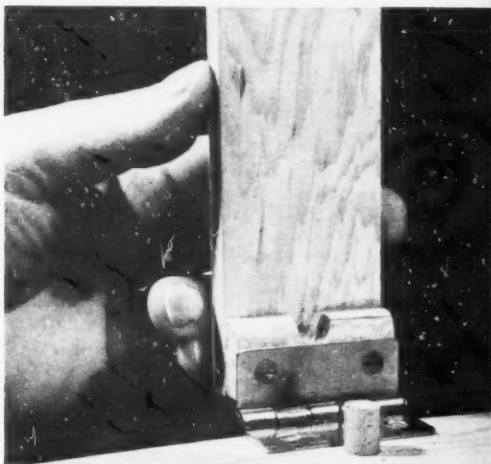
Cutting the printing aperture in the center of the plywood top. All the edges should be sanded.



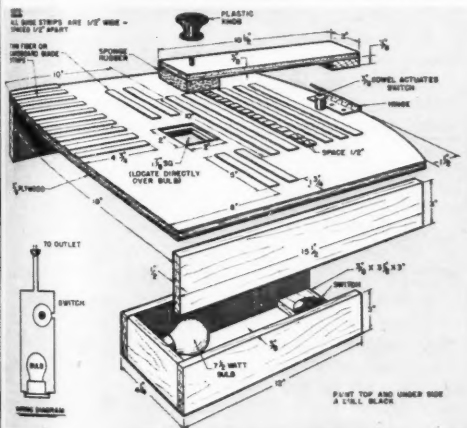
Gluing the light enclosure and side rails to the bottom of printer. Use clamps while glue sets.



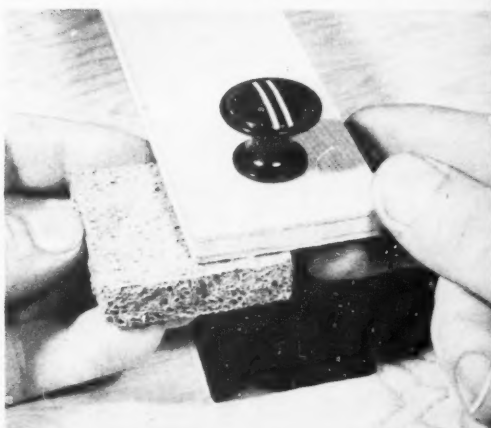
Light control detail. A dowel push rod bears against a doorbell push button to make exposure.



Upper end of the dowel push rod will be depressed to close the circuit when platen is lowered.



Sketch at lower left is the wiring diagram. Note that the bulb and push button are wired in series.



Glue sponge rubber beneath the platen to assure good contact between negative and printing paper.

Dorena

[Continued from page 112]

Install a length of flexible gasoline hose and a good fuel strainer in the line. The cooling-water intake line, Everdur or bronze, leads from a scoop strainer on the outside of the hull to the engine. Place a bronze seacock of suitable size in this line near the hull.

Carefully line up the engine after launching and secure it to the beds with galvanized-iron hanger bolts. These bolts should not be less than 6 in. long.

Both the Coast Guard and insurance underwriters insist that there be means of ventilating the engine compartment. I have detailed suitable supply and exhaust ducts. Make the trunks of $\frac{3}{4}$ -in. mahogany or white pine. Note that the trunk on the port side has a removable top and the one on the starboard side has a removable panel. These are secured with turnbuttons or brass hooks and eyes. Attach a wooden plug to each trunk with brass chain. These plugs are for closing the ducts when sea and weather conditions are bad. Fit clam-shell vents over the trunk openings where shown.

Install the 6-volt marine battery in a box that's made from $\frac{3}{4}$ -in. cypress or white pine and lined with $\frac{1}{8}$ -in. sheet lead. This box must be well secured against shifting. Use heavy marine starter cable between the engine and battery and 10-ga. lead-covered copper wire for all lighting. A small fuse panel and switchboard should be fitted above the battery on the cabin bulkhead. The lighting fixtures are indicated on the plans.

The mainsheet and jibsheet travelers can be ordered from Merriman Bros., 185 Amory St., Boston 30, Mass. Specify Fig. No. 443. The main traveler is $\frac{5}{8}$ in. dia. x 24 in. long; the jib traveler is $\frac{1}{2}$ in. dia. x 18 in. long.

Make the ice hatch and bind its edges with brass. Fit a $\frac{1}{8}$ x $\frac{1}{2}$ -in. soft-rubber gasket around the hatch opening, bedding it in Miracle Adhesive. Add bronze lifting handles to the hatch, as shown.

The deck fittings consist of a pair of 6-in. bronze stern chocks bolted through the transom cap, two 8-in. bronze cleats bolted through the after deck, two similar cleats bolted through the after starboard end of the raised deck, a pair of 5 $\frac{1}{2}$ -in. cast-bronze Skene-pattern bow chocks bolted through the bulwark caps, and three bronze jibsheet fairleads mounted where shown. Make suitable anchor-stowage chocks of mahogany or white oak on the port side of the raised deck. A 1 $\frac{1}{2}$ x 2 x 14-in. locust or white-oak keel is fitted to the bits.

Make the trailboards of $\frac{5}{8}$ -in. mahogany or white pine. You will have to take a spiling of

these from the boat itself. The moldings on the top and bottom edges are $\frac{3}{8}$ -in. half-round mahogany or white pine. Fasten the trailboards to the hull with 1-in. No. 8 screws, countersinking and putting the heads. The decorative stars can be either cut from wood or obtained in wood or die-cast metal from a hobby shop.

Dorena's spars are all detailed except for the bowsprit. Make them of sitka spruce. The bowsprit measures 3 $\frac{1}{2}$ x 6 in. throughout its length. Cut the necessary jogs at the after end so it will fit between the bits and throughfasten with a $\frac{1}{2}$ -in. Everdur or bronze bolt. The stemhead has a 1 $\frac{1}{2}$ x 3-in. tongue in it that buries in the underside of the bowsprit. The gammon iron, which further secures the bowsprit to stemhead, is shown in a detail. The mast is a hollow spar. It is essential that you follow the details carefully. Lute all faying surfaces in this built-up spar with resorcinol synthetic resin and fasten the sides to the ends with 1 $\frac{1}{4}$ -in. No. 9 screws on 4-in. centers. The heads of the screws should be countersunk and covered with Plastic Wood. Round off the corners of all spars. The $\frac{7}{8}$ -in. sail track on the mast is screwed to a mahogany or white-oak feather that's secured to the after side of the mast.

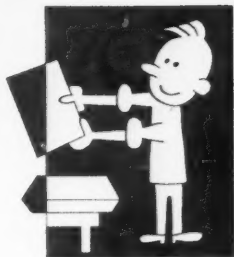
The tangs, crane, and bobstay iron are detailed on the plans. Fit a standard bronze gooseneck. The jib-club fitting can be obtained from Merriman Bros. (Fig. 444B, Size No. 1). The standing rigging should be 1 x 19 or 6 x 7 Hazard Korodless preformed wire rope or galvanized improved preformed pile steel. The lower and upper shrouds and jibstay are $\frac{5}{16}$ in. in diameter and take $\frac{3}{8}$ -in. bronze turnbuckles. The headstay is $\frac{1}{8}$ in. in diameter and requires a $\frac{1}{8}$ -in. turnbuckle.

Have the sails made by a good sailmaker. The correct material for both main and jib is 6-oz. duck. The roach on the leach of the mainsail should not exceed 3 in. and that on the leach of the jib shouldn't be over 2 in. Don't permit the sailmaker to add battens. Be sure that the reef points are fitted where shown.

The method for painting Dorena is important. Paint-manufacturer's directions should be followed explicitly. The entire hull frame should be given two coats of Cuprinol as a dry-rot preventive. Allow thorough drying between coats. Douglas-fir plywood planking must be sealed with Woolsey's Cawseal Plywood Sealer and Primer. The bottom up to the boottop should have three coats of bottom paint, the topsides and boottop should

[Continued on page 136]

darkroom aids

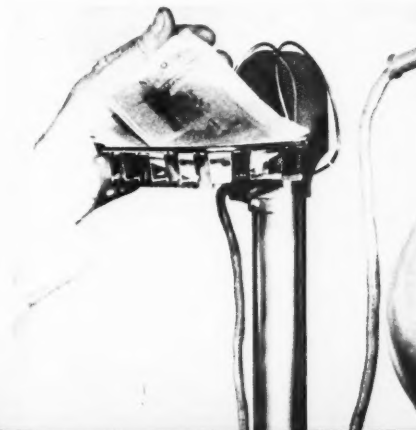


Negative Checker. Try clamping a small magnifier in front of your safelight. You will find it a great help in checking films for flaws or scratches.

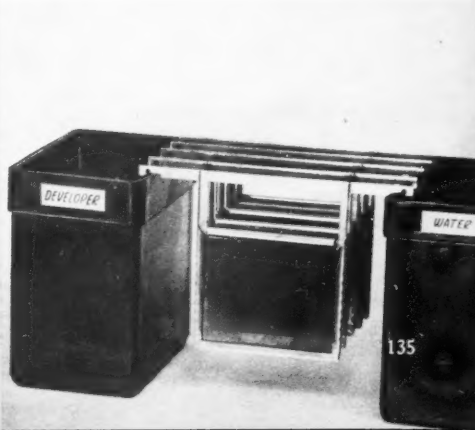


Cut Film Code. Film can be numbered after they are in holders by partially withdrawing slide in darkness and pricking dots along the bottom.

Negative Holder. A soap dish mounted on top of the enlarger post makes a handy receptacle for holding negatives after making enlargements.



Uniform Developing. If you arrange your hangers as shown in photo above, you will be able to deposit the hangers as a unit in developer tank.



on the
ground
trail-
crews.
The
wood
from a

ot for
e. The
ut its
er end
ough-
bolt.
in it
ysprit.
es the
l. The
at you
aying
rcinol
e ends
s. The
nk and
e cor-
on the
e-oak
of the

re de-
ronze
ained
o. 1).
6 x 7
or gal-
l. The
in.
turn-
er and

aker.
jib is
of the
at on
2 in.
attens.
where

mpor-
should
frame
l as a
drying
blank-
awseal
om up
of bot-
should

Dorena

[Continued from page 134]

have three coats of yacht paint, and the canvas-covered raised deck should have three coats of deck paint. All spars need a primer coat, then three coats of spar paint. All bright work requires four coats of high-quality marine spar varnish applied over paste filler and a suitable stain. A color scheme that would make *Dorena* look very handsome would include Woolsey's Vinelast Racing Finish or 715 Tali-Cop Racing Bronze for the bottom; a white boottop line; Woolsey's Cawlux 792 Sea Blue for the topsides up to the main sheer; Woolsey's 760 Yacht-White Gloss for the raised sheer, bulwarks, and bulkheads at the ends of the raised deck; Woolsey's 809 Neptune Blue for the canvas-covered raised deck; Woolsey's 797 Cat-Cay Blue for the background of the trailboards; gold leaf or gilt for the trailboard moldings and stars; and Woolsey's 785 Mast Buff for the spars. The main-deck planking should be finished with oil (three coats of 50-50 hot linseed oil and turps and a final rubbed-in coat of good floor oil) or Woolsey's 811 Tile Red with a non-skid compound added. The entire inside of the hull should be finished with three coats of good marine paint—a combination of Woolsey's 788 Nassau Green and 783 Bone Ivory would be handsome.

Equip the berths with 3-in. Goodyear Air-foam or Firestone Airtex cushions. Cover these with dyed yacht duck of a suitable color. The side and stern lights should be of the oil-burning type. You will need light boards for the side lights—these fasten to the shrouds on each side. The stern light can be secured to the end of the boom or to the gallow's frame.

Two one-quart carbon-tet fire extinguishers should be carried—one in a suitable bracket just inside the companionway and the other where it can be readily reached from the fore hatch and the berths.

The service anchor, a 30-lb. Mark III Danforth, is carried in chocks on deck. The storm anchor, a 50-lb. Danforth, may be stowed in the forepeak. The anchor rode is 25 fathoms of $\frac{3}{4}$ -in. manila and 30 fathoms of 1-in. manila. Shackle one fathom of $\frac{3}{8}$ -in. BBB galvanized chain to each anchor. The weight of the chain on the stock improves the holding power. The two dock lines are six-fathom lengths of $\frac{3}{4}$ -in. manila, each with a properly turned eye-splice in one end and neat sailmaker's whipping on the other end.

You must carry at least one life preserver for every person aboard. Any cruiser needs a good compass—a 5-in. one in a neat box would be fine for *Dorena*. Fit mahogany chocks on the main deck just forward of the

cockpit in which to stow the compass box. Your boat's name and hailing port should be neatly lettered in gold leaf on the transom and her registration number should be put on each bow. If gold leaf sounds too difficult, use plain cast-bronze letters and numbers. You'll need a mop, yacht broom, canvas bucket, engine tools, sailmaker's ditty bag, fenders, etc.

I've saved inside ballast until last. The proper way to determine the amount required and to locate it fore and aft is to ballast the boat after she is complete in all respects, with gear and fittings aboard and the tanks half full. One person should be seated in the cockpit and another should be below. The ballast can be in the form of lead pigs, iron pigs, or iron sash weights. If of iron, every piece should be completely coated with hot pitch. Fit battens of 1-in. white oak or Douglas fir fore and aft between the floor timbers on which to stow the ballast. The ballast must be secured against shifting with more battens and suitable chocks. You will need approximately 900 lb. of inside ballast if you have used a cast-iron or welded-steel shoe and about 700 lb. if you've fitted a cast-lead shoe.

When you get your *Dorena* completed, an invitation to go cruising would be most acceptable! •

How to Lay Asphalt Tile

[Continued from page 121]

seam is to be successful. As soon as all the linoleum has been cemented in place, go over it with a heavy roller. If no other roller is available, a clean, smooth garden roller can be used. Weights should be placed on the seams to prevent their coming loose before the cement has fully dried.

Exposed edges of linoleum at doorways or on steps should be protected with standard metal strips. Quarter-round molding should be nailed to the bottoms of the baseboards to cover the raw linoleum edges.

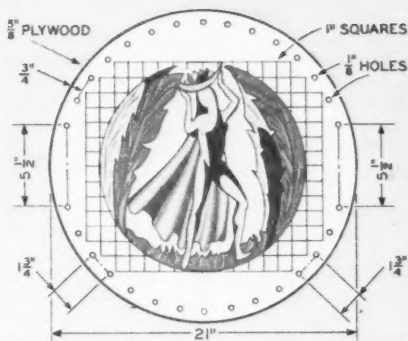
To keep the floors clean and attractive, wipe them often with a damp mop and wash them occasionally with soap and lukewarm water. After washing, rinse thoroughly to remove all traces of soap from the surface. Allow to dry and apply a coat of water-emulsion wax. This will produce a pleasing luster and can be brought to a high gloss with a power polisher. The frequency of waxing depends entirely on the amount of traffic to which the flooring is subjected. •

PLYWOOD TRAY

ANYONE can closely duplicate this attractive and useful tray. The body is cut from $\frac{5}{8}$ -in. plywood. Locate and bore the rope holes as shown, leaving $5\frac{1}{2}$ -in. blank spaces on opposite sides for the handles. There are 30 holes to be bored. Next, both sides of the disk should be thoroughly sanded with progressively finer grades of sandpaper until the surface is completely smooth.

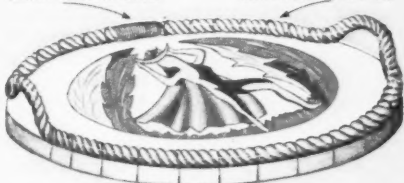
A suitable decal can be obtained from any novelty store or you can cut a color illustration from a magazine and shellac it to the tray. If you draw your own design, it can be transferred to the tray, by using carbon paper, and colored with enamels, paints, or temperas. If temperas are used, spray the plywood afterwards with a fixative to prevent running.

Apply a coat of clear lacquer. When dry, fasten the manila rope in place with heavy fishline, employing buttonhole stitching. Brush on at least two more coats of lacquer, covering both tray and rope and sanding lightly between coats; then finish up with a coat of heat-and-alcohol-resistant varnish. If the tray is to be hung from the wall when not in use, use a nail punch to make a small recess in the bottom. This recess can then be slipped over a nail or other hanger that's driven into the wall.



ENDS TAPED TOGETHER & THEN WRAPPED WITH HEAVY FISHING CORD

LACE THE ROPE FIRMLY TO THE TRAY WITH A BUTTONHOLE STITCH



If you're no artist, substitute a decal or a cutout from a magazine for the hand-painted design shown here.

Tape ends of a 6-ft. length of rope together and wrap with heavy fishline; then lace the rope to the tray.



"Ichabod"

[Continued from page 124]

Cut the coil mounts from $\frac{1}{16}$ in. mahogany plywood, glue them to the coil, and mount on the firewall. Mount the engine and tank and complete the wiring.

Cement the soft balsa tail block in place at the rear of the fuselage. Carve it carefully to shape, making sure that the angle of incidence is correct. Cement a piece of $\frac{1}{4}$ in. dowel in the rear of the fuselage to take the tail hinge.

The stabilizer is a bit difficult to construct, but your extra trouble will be rewarded with a practically warp-proof tail. Cut the spar from a piece of very hard $\frac{1}{4}$ in. sheet. Pin the spar upright on the plans, blocking the tips up with $\frac{3}{16}$ in. scrap. Cut the trailing edge from $\frac{1}{4}$ in. very hard balsa and notch it to receive the $\frac{1}{16}$ in. ribs. Pin the trailing edge over the plans, blocking it up with $\frac{1}{4}$ in. scraps. The ribs are rectangular pieces of $\frac{1}{16}$ in. balsa, carved to an airfoil section after the stab is complete. Cement the ribs in place, followed by the $\frac{1}{4}$ in. square leading edge which is blocked up $\frac{1}{4}$ in. When the assembly is dry, remove the stab from the plans and carefully carve each rib to an approximate symmetrical section. Carve the leading and trailing edges to shape and sand the whole assembly.

Lay out the rudder trailing edge, tip, and spar on the plans. When dry, remove and cement the $\frac{1}{16}$ in. bottom block in place. The ribs are made of $\frac{1}{16}$ x $\frac{3}{16}$ in. balsa bent around the spar. Cut the rudder trim tab out of the trailing edge and mount on soft wire hinges. The rudder and sub-rudders are cemented to the stab after covering.

Pin, or lightly cement, the stab in place on the fuselage tail block. Make the dethermalizer catch from $\frac{3}{32}$ in. brass and cement it to the stab, making sure that the hole lines up with the dethermalizer pushrod. Bend the stab hinges from $\frac{1}{16}$ in. music wire by the bend and try method. Insert the hinges in the tubing-lined dowel in the fuselage and cement them to the stab. A small piece of Flitex or crinoline may be cemented over the wire on the stab for extra strength. When the hinges are dry, run a piece of fish line down through the stab and fuselage. Cement it to the bottom of the fuselage and top of the stab, adjusting the length so that the stab will rise about 30 degrees. A small rubber band hooked between the rudder and the fuselage serves to pull the tail up into the dethermalized position.

The wing is built over the plans in the conventional manner. Use very hard balsa throughout. Notice that the center section is flat. Use $\frac{1}{4}$ x1 in. pre-tapered stock for the trailing edge and notch it for the $\frac{1}{16}$ in. ribs. The spars are $\frac{1}{4}$ x $\frac{1}{2}$ in. balsa and are tapered

in the outer wing panels. The leading edge is $\frac{1}{4}$ in. square. Cement the wing together at the four polyhedral joints. Make sure that the spars fit exactly and pre-cement them before making the joint final.

Cover the fuselage with 00 Silkspar and the wing and tail with Jap tissue. After four coats of full strength aircraft dope, the covering will be tough and smooth.

Adjust your Ichabod for a slightly nose-heavy glide from the hand. A slight amount of left turn is desirable too. Use full retard throttle and ten second engine runs for the first few flights. The ship will tend to lose a lot of altitude when the engine cuts under low power conditions, but this tendency will disappear under full throttle settings and the ship will roll right out of the climb while killing off its speed. Don't forget to set the dethermalizer even on the short test hops. Ichabod can pick up a thermal at almost any altitude. One word of caution—and perhaps we should have mentioned this sooner. If you have flat feet, short wind, and don't like to hike, then don't build an Ichabod! •

Automatic Ventilator

[Continued from page 127]

to be replaced. You will be amazed at how much dust is accumulated. The filter is a standard 10 x 20 x 1 in. Fiberglass filter. These are generally available locally, but if not, they may be obtained by mail from the Air Filters Co., of 32 E. 4th St., N. Y. C., for \$1.00 each.

When the outer housing has been attached to the front panel, the unit is complete and ready to be installed. It is fastened in the window by means of two side pieces which fit into the window sash and are screwed to the front panel. The legs attached to the outer housing help support strain from the window sash.

With the automatic timer, the ventilator may be set to go on for any length of time within a twelve-hour period. With this timer, you may set the ventilator to turn on while you are not at home, and come in to find that your apartment or house has been comfortably cooled.

The best method of using a ventilator is shown in the house diagram. The air outlet should be located in a room so that the cool fresh air passes through the entire length of the room. The ventilator should be operated during the evening and night or in the early morning when outside temperatures are below that of the interior of the house. •

miniature wheelbarrow



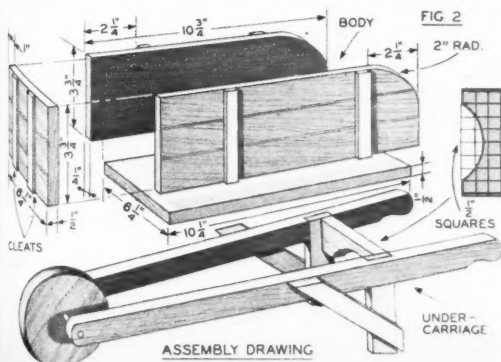
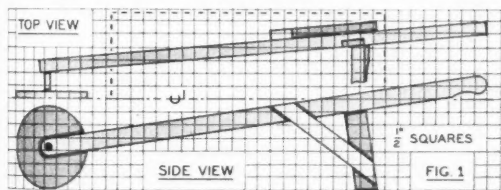
Wheelbarrow should be planned so that one of the ice trays of your refrigerator will fit in it.

BUILD a small wheelbarrow so that one of the ice trays of your refrigerator will fit in it and you will have a decorative table accessory for which you will find many uses. Such an ornamental wheelbarrow cannot only be used to serve food such as doughnuts or grapes but also can be filled with flowers or serve as a handy receptacle for ice cubes.

Make the wheelbarrow out of scrap plywood. Cut two shallow kerfs in the sides to give the effect of planks. Paint with bright contrasting colors and finish with decals.—*Bertram Brownold*



Apply glue to the hardwood pegs before driving them home. Space nails to avoid the pegs.



Flower-laden it makes a decorative table piece. Saw kerfs make sides resemble planks.

Spotlight Slide Projector

[Continued from page 130]

is placed in the projector, a circle of brilliant white light is thrown.

If you want the circle of light slightly diffused, throw the slide slightly out of focus. Perfectly sharp edges may be obtained by focusing the slide sharply.

If the spotlight is too strong, use a slide with a smaller hole and with the projector further away. If a modified and more diffused illumination is wanted, place a piece of crumpled cellophane over the lens. It is also possible to make spots shaped like stars, hearts, or crescents by cutting these shapes. The uses of this device in portraiture, flower photography and particularly table-top work are limited only by the ingenuity of the amateur.

The spotlight may either be used by itself, or it may be used as part of a more complex lighting set-up. If desired, a spotlight used as a main light source may be supplemented by a single fill-in flood to soften black shadows.

A projector-spotlight as described has a particular value in the taking of pictorial portraits. Many such pictures, especially those of women, gain a great deal through the presence of a highlight, usually on the hair.

The customary balanced lighting set-up is first arranged. This usually consists of two floodlights. One of these illuminates the face, giving modeling and casting pleasing shadows. It is usually above the face and slightly forward. The second light fills in the shadows.

If, in addition, the projector is used to supply a glint or highlight in the hair a great deal is added to the picture. The projector should be placed slightly above and behind the subject, far enough to the right or left to be out of range of the camera. A slide should be used in the projector, which gives a fairly concentrated circle of light, and this should be centered on the hair.

The strength of the highlight thus secured will be in direct proportion to the closeness of the projector to the subject. Where a dark background is used, the highlight need not be as strong as where the background is light. Constant reference should be made to the camera's ground glass to make sure that the highlight is strong enough to be noticeable, but not too strong. A general reading on the whole scene may be taken with an exposure meter and another one on the highlight. These may be averaged.

If the subject is a blonde and a "halo" is desired, the projector may be placed directly behind the head of the subject, pointed toward

the camera but, completely hidden. To secure maximum effect, the projector should be as high as possible, without being seen, and fairly close to the subject. A slide should be used in the projector which allows the light to cover the entire back of the model's head and hair. Another interesting effect may be secured by using the projector to illuminate the background. •

Photo Stamp Printer

[Continued from page 132]

with red Cellophane if desired, although in practice this was not found necessary.

The illumination and switch arrangement can be seen in the photo. A small white-frosted 7½-watt lamp in an ordinary porcelain receptacle is used. The socket is wired in series with an ordinary doorbell push button. As the lamp draws very little current, this type of switch was found to be entirely satisfactory, although it definitely should not be used for other applications where a heavy current is required.

A hole is drilled immediately above the push button for a wooden dowel. The dowel, serves as a push rod when it is depressed by the lowering of the platen. The working end of the latter is cushioned with a square of sponge rubber cut from a kitchen sponge.

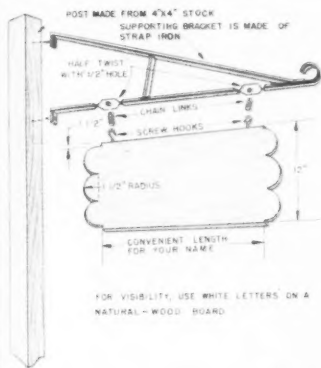
It will be necessary to sand one end of the dowel push rod down gradually until it actuates the switch only when pressure is placed on the forward end of the platen. This is required because the printing paper must be pressed firmly against the negative before each exposure is made.

Strips of thin fiber or red cardboard can be used to guide the printing paper into 100 or less different positions. They are cemented directly to the top. If you use rubber cement, the strips can be removed for adjustment or replacement without leaving a mark. Cut the strips and space them as indicated in the diagram. The printing paper is started at the lower right corner and moved to the left, with one exposure each time it is shifted into position against the edges of succeeding guides. At the extreme left position it is raised one frame and exposures continue while the paper is shifted to the right.

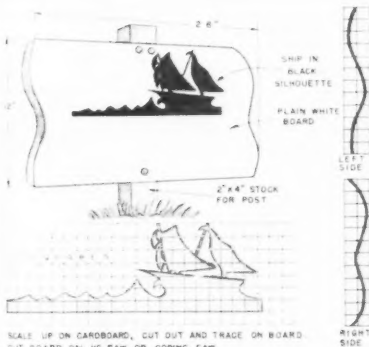
Cut the masks from thin black paper, or use special Kodak masking sheets. Average negatives printed on contact paper will require about two seconds exposure. A little practice will make it easy to keep the exposures uniform. •

A NAMEPLATE for your home

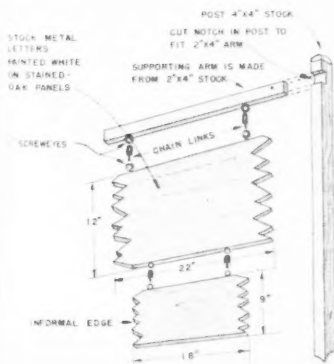
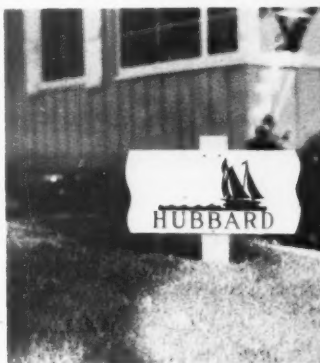
Is your home easily identifiable? If not, you should construct one of these individual-looking nameplates.



Much to the annoyance of visitors, suburban and country houses are all too often inadequately identified. With a sign like this, though, you need never fear that the weekend guest will lose his way. Fabricate the bracket from strap iron and the board from good stock such as mahogany so it will be handsome with a natural varnished finish and white letters.



If you are interested in boats or if you live near the water, a sailboat motif is always good. Here a board is given curved edges with a jig saw and finished with two coats of white paint; then, employing black paint, the simple but effective ketch is silhouetted and your last name is neatly added at the bottom.



Even if you're not much of a craftsman, you can turn out a job that'll be a charming accessory to your residence. As an example of complete simplicity without any sacrifice of symmetry, consider this nameplate. Standard metal letters from the hardware store are finished white and nailed to a rough-oak stained panel. Note the quaint bird on the arm.



To se-
uld be
, and
ould
e light
head
ay be
ninate

F
ugh in
ement
rosted
in re-
series
n. As
s type
ctory,
ed for
ent is

re the
lowel,
ed by
ng end
are of
ge.
of the
it ac-
placed
his is
ust be
before

d can
to 100
ented
ement,
ent or
Cut
in the
at the
, with
posi-
guides.
and one
paper

or use
e neg-
quire
prac-
osures

Foolproof Rangefinder

[Continued from page 131]

eye must be depressed in looking at the base of the object he expects to photograph. To determine the distance to, say, a person standing on the other side of a room, the photographer holds the rangefinder in line with his eye, and by means of a front and rear sight and a pendulum arrangement, adjusts it so it is level. Then, without moving the instrument, he raises his head slightly and looks across the rear sight at the feet of the other person. The distance is indicated by a vertical scale at the front of the meter.

Although it is possible to make a distance meter that is adjustable for persons of various heights, construction is greatly simplified by making the instrument a personal meter that is designed for the photographer's eye height.

The accompanying table gives a set of angles for ten different eye levels, and for eleven distances. These angles are measured between the horizontal line of sight when looking at an object (line ON, Fig. 6) and the line of sight when looking at its base (line OM). The angle varies with the distance from eye to object. Determine your eye height and select the proper set of angles from the table.

Cut a piece of sheet metal to the shape shown in Fig. 1, being careful to make the upper edge and the scribed line W parallel, and the lines A and B an exact right-angle to W. Later, you will bend the right- and left-hand portions of the piece along A and B. The edge OZ forms the rear sight of the meter, and is a part of line W. The notch at the left-hand end of line W is cut so its lower edge is a portion of that line. After scribing these various lines, you are ready to lay out the angles, all of which are measured from W, with the point O as the center.

From the column of the table under your eye height, select one angle, say that for an observer-to-object distance of 8 ft. If your eye level is, for example, 5 ft. 4 in., the angle your eye drops from the horizontal when looking at the base of an object 8 ft. away and on the same level as your feet is $33\frac{1}{2}^\circ$. With a protractor, carefully lay off the line Y in Fig 1, running it from point O to the vertical line A. Next scribe lightly a horizontal line from the intersection of A and Y to the left-hand edge of the piece of metal. Next, select another angle, say 15° , and lay it out the same way. This line indicates the 20 ft. mark. Do this with all the rest of the angles in your column of the table. At the point where each horizontal line from A to the left-hand edge meets the edge, file a small notch, and stamp or engrave a line about $\frac{1}{8}$ in. long running inward from the notch. It is important that

the notches be accurately placed, and the lines parallel to line W.

Using steel stamps or other means, number each line and notch, as shown in Fig. 1 and the table. Very carefully, bend the left- and right-hand portions of the piece forward, along the lines A and B, until they are at right-angles to the central portion.

The pendulum, which may be made of brass, consists of a weight on an L-shaped piece, as shown in Figs. 2 and 7. It is mounted by means of a rivet or small screw passing through a hole at the junction of the two arms. The pointed tip of the shorter arm is bent outward at right angles so that, as the pendulum swings, its point passes in front of the notch that forms the front sight of the meter. The point should cover about half of the notch (Fig. 5) and be $\frac{1}{8}$ in. to $\frac{1}{4}$ in. from it. The pendulum weight is a piece of rod shaped as shown in Fig. 3 and held by solder. The groove, which is optional, is as deep as the pendulum arm is thick. The point of the arm projecting below this weight can be used to indicate the level position by observing the meter from the side instead of along the sights. To prevent the weight from rattling about too much, a guard strip shaped as shown in Fig. 4 is mounted over the pendulum arm.

After assembly of the various pieces, clamp the rangefinder in a vise, and place a spirit level on its top edge. When this edge is perfectly horizontal, make a mark at the point where the pendulum point below the weight rests (Fig. 7). Thereafter, you can use this mark for checking the position of the meter. Now sight with your eye across the rear sight and the lower edge of the notch. If the tip of the horizontal pendulum arm is not centered in the notch as shown in Fig. 5, bend the arm slightly up or down until it is centered.

Now, to level the meter, you simply align the rear and front sights with your eye; then, while keeping the sights in line, raise or lower the meter until the pendulum-arm tip centers itself in the notch. The meter is now level. To find the distance to an object, raise your head and eye, or move the eye closer, until you can look across the rear sight and see the base of the object. At the same time, you observe the distance by noting the spot on the scale that is in line with this sight. You can estimate closely enough the distances that are not marked. It doesn't matter much whether you hold the meter close to your face or farther away when sighting. Use whatever distances are most convenient, but remember that the measurement will be from the meter not from your eye. •

Kodachrome
slides

Kodacolor
snapshots

Kodak
Ektachrome
transparencies

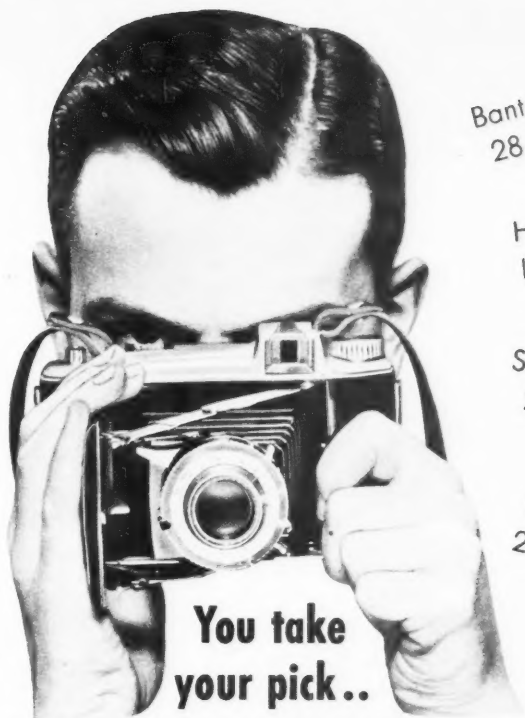
Black-and-
white negatives

Bantam (828)
28 x 40mm.

Half-620
1 5/8 x 2 1/4

Square 620
2 1/4 x 2 1/4

Full 620
2 1/4 x 3 1/4



**You take
your pick..**

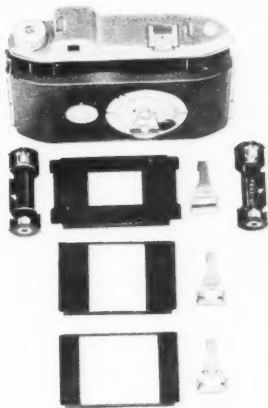
**with KODAK TOURIST CAMERA f/4.5 or f/6.3
and new Adapter Kit with interchangeable back and masks**

Change-over is quick and easy

... slip on adapter back, add masks for negative and view finder; for 828 film, add spool baskets as well. Adjust picture-size guide on adapter back. Now you're all set for your choice of a variety of films and kinds of pictures, including miniature Kodachrome slides.

Enjoy other new camera features

...shutter release set into camera bed; brilliant view finder; built-in exposure guide. Kodak Tourist Adapter Kit, \$14.50, fits these models: Kodak Tourist Camera with f/4.5 lens, \$71; with f/6.3 lens, \$47.50. Prices include Federal Tax. At your dealer's.



"Kodak" is a trade-mark

SPECIAL BACK ... without accessories, gives full 2 1/4 x 3 1/4 size ... 8 shots on black-and-white Kodak 620 Film; 6 on Kodak Ektachrome or Kodacolor Film.

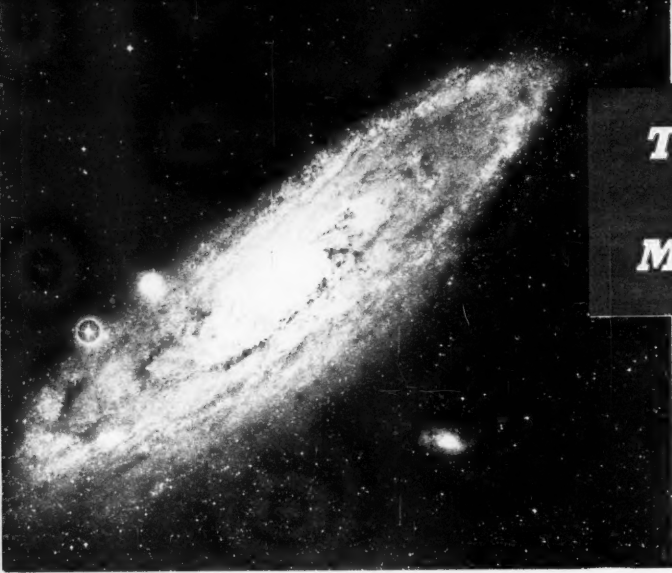
BANTAM ASSEMBLY ... (28 x 40mm.) ... 8 shots on black-and-white Kodak 828 Films or Kodachrome Film.

1 1/8 x 2 1/4 MASKS ... 16 shots on black-and-white Kodak 620 Films, 12 on Kodak Ektachrome or Kodacolor Film.

2 1/4 x 2 1/4 MASKS ... 12 shots on black-and-white Kodak 620 Films, 9 on Kodak Ektachrome or Kodacolor Film.

Kodak

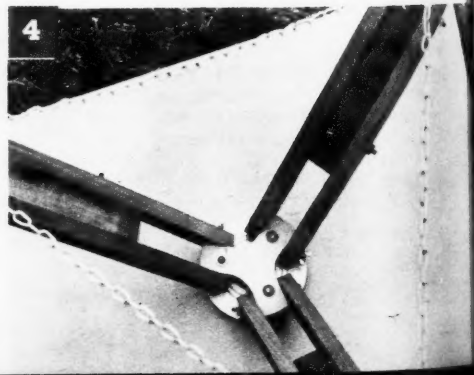
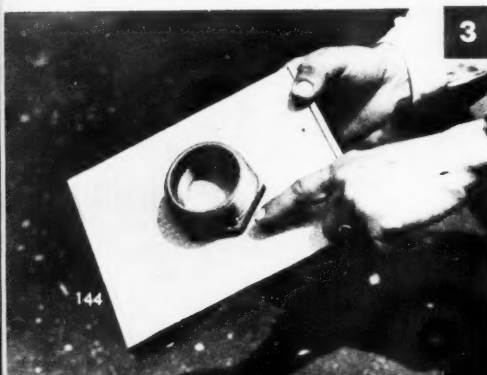
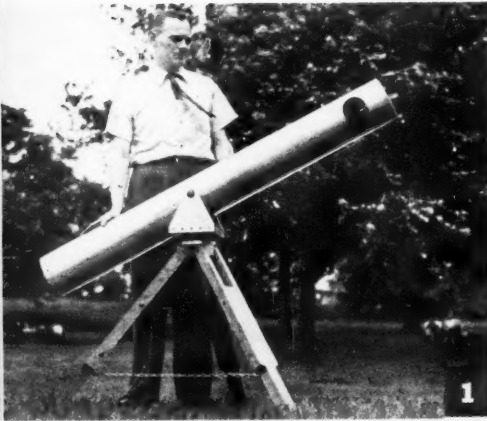
EASTMAN KODAK COMPANY, ROCHESTER 4, N. Y.



The Amateur Telescope Maker's Page

Giant nebula in the constellation of Andromeda. Courtesy Lick Observatory.

Conducted by Robert Brightman



Quarter-Ton Tripod

NEXT to the mirror the most important part of your telescope should be the mounting. You will see far more with a six-inch instrument mounted on a sturdy tripod than with an eight-inch job fastened with wire and hope to a post stuck in the ground. Many of the pictures received in this department show evidence of superb workmanship and design. However, far too many readers evidently fall down when it comes to the mounting. The tripod which we are about to describe was tested and supported six full bags of cement, about 564 pounds, more than a quarter of a ton!

Each leg consists of two pieces of walnut $\frac{7}{8}$ x $1\frac{3}{4}$ in. and one piece $1\frac{3}{4}$ x $1\frac{3}{4}$ in. All are 2 ft. long. The side pieces are bolted to the middle piece with carriage bolts. Note that the bottoms of the legs are beveled to prevent splintering. This is easily done by tilting the table of your band saw or circular saw and then feeding the work across the table.

The maple head to which the legs are attached is cut out of a piece of stock, $1\frac{3}{4}$ in.

thick. The best way to cut this head is to first lay out the pattern on a piece of paper and then cement this to the wood. A band saw is the ideal tool with which to cut the head. Lacking this tool, you can do the work with a coping saw. Sand the inner contours smoothly after you have finished.

The bearing on which the telescope swings consists of a flange, which is bolted to the head at three equidistant points and a pipe bushing. The bronze flange and bushing can be obtained from any large steam fitters supply house. It is known in the trade as a $2\frac{1}{2}$ x 7 in. Walworth companion flange. The $2\frac{1}{2}$ x 2 in. bronze pipe bushing should be lapped into the flange by applying some carborundum and water to the threads and then screwing it in and out until a smooth fit is obtained. This is quite important as upon it depends the smoothness with which the telescope can be swung in right ascension. After you have determined at what angle you want the legs to meet the ground, insert a screw eye at a point about 9 in. from the bottom and slip a length of galvanized chain over each eye. [Continued on page 164]

Auto Road Racing

[Continued from page 81]

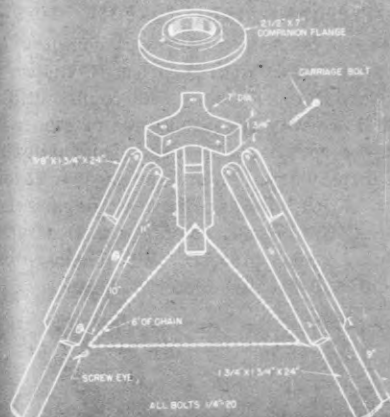
remember those early road races than most people. My father was with the Mercedes Company and was in charge of several race teams. We had a large garage at our home in Larchmont, N. Y., and I remember as if it were yesterday the German mechanics and drivers experimenting there with fuel formulas and new racing gadgets. This garage was the secret experimental plant. I also remember the time Pop was thrown 80 feet over a stone wall when a steering knuckle broke on a test run.

Always a magic name in racing, Mercedes then built a factory in Long Island City under the German patents and licenses. The show room was on Fifth Avenue, New York, and the top Mercedes mechanic often put on his own show on this famous street.

The stunt I liked best was one he did in the early morning, just after the streets had been hosed down. He placed a dozen eggs along the curb. Six of the eggs were spotted where the front wheels should stop and six where the rear wheels should be. He roared off for several blocks. Then he turned around and tore back. Just before passing us on the sidewalk, he hit the brakes and threw the car into a looping skid. When the car came to a stop, the front and rear wheels always were within an inch of those eggs. I

[Continued on page 151]

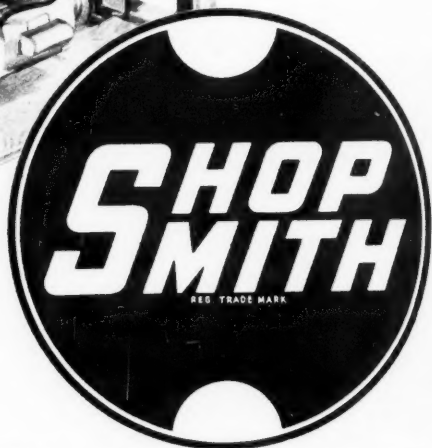
- 1 Six inch reflecting telescope mounted on heavy duty tripod described in text. Tripod is capable of supporting at least 500 pounds.
- 2 Band saw is being used to cut out the contours of the maple head. Pattern can be followed by pasting a paper template over head.
- 3 Pipe bushing is fastened to bottom of yoke by three equidistant $\frac{1}{4}$ x 20 bolts which pass through base and engage tapped hole in bushing.
- 4 View from bottom showing how legs are attached to head. Wing nuts serve to put desired tension on legs. Bolts in center secure bushing.





ONLY \$199.50 FOR A COMPLETE POWER WORKSHOP

Your complete
power workshop in
just 18" x 60" floor space.
With ½-hp. ball-bearing
motor illustrated, \$199.50.



FOR less than \$200—and with eight square feet of floor space—you can have a power shop second to none in capacity, accuracy and flexibility. It's SHOPSMITH—five heavy-duty, extra-feature tools in one unit so beautifully engineered, so ingeniously designed that you can convert from tool to tool in less than 60 seconds.

NEVER BEFORE SUCH AMAZING CAPACITY

Imagine a circular saw that cuts to center of 8' plywood panels . . . a lathe that takes work up to 15 inches in diameter . . . a drill press that mortises doors and panels as easily as it drills miniature parts . . . a disc sander that squares, miters and

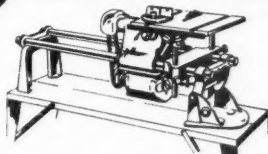
finishes with "try square" accuracy. You get these, and more, with SHOPSMITH.

OUTPERFORMS SINGLE-PURPOSE TOOLS

Compare SHOPSMITH with any combination of single tools at any price. Compare it for accuracy, capacity, all-round utility. You'll see why the thousands of men who own SHOPSMITH praise it so enthusiastically. On display at any Montgomery Ward store and at leading hardware or department stores. SHOPSMITH, complete with attachments, costs \$169.50. With heavy-duty ½-hp. ball-bearing motor, \$199.50.

5 RUGGED POWER TOOLS IN

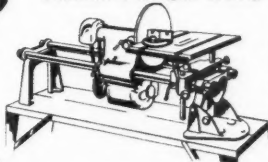
1 EIGHT-INCH CIRCULAR SAW



Effective table width up to 56". Maximum depth of cut, 2 1/4". Machined cast-aluminum tilting table, ribbed for extra strength. Precision-tooled rip fence and miter gauge. Unique micro-adjustment permits extremely accurate ripping.



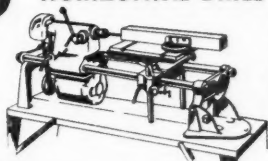
2 TWELVE-INCH DISC SANDER



Cast-aluminum disc easy to attach and remove. Extra-large, adjustable table measures 14 1/2" x 17". Miter gauge and rip fence can be used for accurate squaring and jointing. Has features found in no other disc sander.



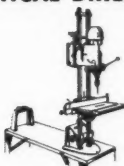
3 HORIZONTAL DRILL PRESS



Extremely useful operation possible only with SHOPSMITH. 4" quill feed, automatic stops. Permits large, heavy pieces to be drilled or mortised quickly and accurately. Eliminates need for jigs. Length of work limited only by size of room.



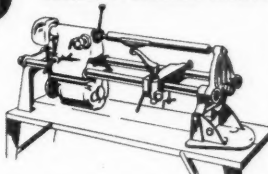
4 VERTICAL DRILL PRESS



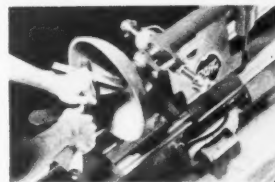
SHOPSMITH drills to the center of a 15" circle, has a maximum clearance table to chuck of 27". Jacobs key chuck takes drills from 5/64" to 1/2" diameter. Rugged, six-spline spindle with 4" feed. Variable speeds 875 to 3500 rpm.



5 THIRTY-THREE-INCH WOOD LATHE



With a 15" swing, SHOPSMITH has greater capacity than most other heavy-duty lathes. Distance between centers, 33". Swivel-arm tool rest always slides parallel to ways—no need for constant adjusting. Has 4" quill feed. Quickly adaptable for oversized faceplate work.



AND THAT'S NOT ALL! WE'VE MORE TO TELL YOU, BUT NO MORE SPACE TO TELL IT HERE. IT'S ALL COVERED IN AN ATTRACTIVE, ILLUSTRATED BOOKLET. WRITE FOR YOUR FREE COPY TODAY!

Address **SHOPSMITH, Dept. 102-N,**
at factory nearest you.
12819 Coit Rd., Cleveland 8, Ohio, OR
417 Montgomery St., San Francisco, Calif.

I'm interested in SHOPSMITH. Please send me a free copy of the descriptive booklet. And tell me where I can see SHOPSMITH demonstrated.

Name _____

Address _____

City _____ State _____

When Answering Advertisements, Please Mention **MECHANIX ILLUSTRATED**

"Bricklaying"

[Continued from page 105]

sidewalk work is that most frequently used.

Making brick steps and porches is more difficult but can nevertheless be mastered by the novice. Steps are generally laid in a bed of mortar or concrete. To do this, excavate to a depth of 9 inches and put in a foundation of gravel or cinders well tamped down. The concrete base requires the building a form, as shown. A desirable formula to use for steps is twice the height of the riser plus the width of the tread equals 25. In general, steps should be at least 3 ft. wide.

A light concrete mixture consisting of 1 part cement, 2¾ parts sand and 4 parts pebbles is poured into the form. The concrete base can be eliminated entirely and the solid brick bed used as a form if the steps are attached to the foundation walls with steel reinforcing. The excavation should be deep enough to accommodate a base of cinders or gravel and the thickness of two bricks laid flat. Bricks should be wet before they are laid; dry porous bricks absorb too much moisture. Water by sprinkling them with a hose for five minutes before use.

Starting at one corner, place a bed of mortar on the foundation with a trowel and edge each brick into position. Sufficient mortar must be used to fill the space completely between the brick and the foundation, and the brick should be tapped down into the mortar bed. Excess mortar that oozes out of the joints should be scraped off the outside edge with the trowel. After the first layer or course of bricks are laid in this fashion, the second layer is started and proceeds in the same manner. Frequent use of the level and a straightedge will assure a good job.

In porch and step wall construction it is a good practice to finish the joints on the exterior face. Three styles of jointing are shown. The down slant joint is preferred because of its water shedding ability. All jointing should be done after the mortar has stiffened slightly.

The inside cavity between the side brick wall, the steps and main body of the house now should be filled in with a mix consisting of 1 part cement, 2 parts sand and 4 parts gravel. Steel reinforcing rods, ½ inch in diameter may be placed in the mixture.

To remove mortar stains, soak the surface with water, then wash with 1 part hydrochloric acid to 10 parts of water. Since the solution will attack the mortar, a final rinsing with clear water is important. Mix the solution in a glass container or a wooden pail, and wash your hands in diluted mixture of bicarbonate of soda after working. •

Arctic Pigmy Tank

[Continued from page 94]

To cover the middle ranges, a pair of .30 caliber airplane-type machineguns balance the 75 on the other side of the periscope. For short range tank defence, a .45 caliber M-3 "squirt gun" protrudes from each side of the turret. Another pair of M-3s are set in the Pigmy's front plate for close pursuit of enemy personnel, with a flame thrower and its tanks also placed between them. All three are in ball mounts and connected to a common control grip which can be manipulated by either of the crew.

The turret presented an unusual problem in design. The backward blast of the 75 requires a rear opening to vent the gas clear of the tank's superstructure. The gun, however, must be capable of a full 360 degree pivot and ample elevation. Conventional mounting is therefore impossible. The final solution was to mount the guns, ammunition feeds, etc., rigidly into the turret and rotate and elevate the whole thing as a unit.

The Pigmy should be considered a tiny, self-contained task force. It furnishes its own land and water transportation, mounts its own artillery and automatic weapons and carries its own reserve ammunition, fuel and rations. It's equipped for telescopic observation and radio communication with its base unit and with members of its own team. Just like the old-time horse cavalry squad, the Pigmy team can be employed independently for patrolling or concentrated in platoons, companies or battalions for shock assault.

Four armored infantrymen form an important part of the Pigmy's team. They provide flank and rear protection during fights and also act as mop-up men in anti-personnel assaults. If necessary, they may be armed with small mortars. In warm weather operations, the men ride the tank, two of them sitting atop the cargo and two lying or sitting on the slanting rear of the top deck. In winter snows, they may alternate by taking to skis or being towed on a cargo sledge.

Posted around our Arctic air bases at strategic points, a battalion of 40 such tank teams with scout planes and Weasel supply vehicles, could provide real protection against surprise paratroop attacks. A force of 300 men with these tanks could defend a vital airfield far more effectively than five times the number of regular infantrymen.

So, if invasion finally does come in the North, it may very well be that the tiny Arctic Pigmy Tank rather than any super-mammoth weapon will prove to be our most effective defence. •

I Psychoanalyze Ghosts

[Continued from page 60]

mysterious arrival of objects when they could not rationally have appeared.

Mrs. X apported some curious objects out of thin air—pieces of pottery from Carthage, Roman lamps, fossils, prehistoric flint axes, lockets and African fetishes. A one-piece garment which we made her wear after an examination in the nude did not seem to affect the bewildering regularity of the arrival of her apports.

While we watched, tea-cups flew out of her hands, saucers split in mid-air, white mice appeared on the floor. At one point, a bird flew up from a point near the bottom of her skirt with a shrill cry.

Then, we sprung an X-ray examination on her. There, suspended on a belt around her waist were the apports. But how did she get them past the ladies who made her undress before each experiment? The evidence could not be challenged—she hid them in the only place where delicacy would not permit a search!

The public was aroused. How much of Mrs. X's supernatural powers was real and how much was fraud? It was impossible to be sure. I realized that even *she* did not recognize the tricks her mind had been playing on her.

But she had to be told.

Suddenly, she complained of a tightening feeling in her throat. In full daylight, with three other witnesses present, strangulation marks began to appear on her throat. Two blood-red half circles, a quarter of an inch wide showed up. Her hands were not raised to her throat and upon being tested for their span could not overlap as the noose mark did. The marks lasted for about 40 minutes and Mrs. X's throat was sore for two days.

After this realistic self-hanging, the Poltergeist was no more. Mrs. X's fantastic unconscious had used that psychological symbolism to rid her mind of its terrible "ghost."

Obviously, she was an extreme case. Real psychical disturbances were combining with purely psychological ones to produce the state of unbalance in which she found herself. Certainly, to some extent she was a fraud. But there were aspects of the case which could not be laughed off, although there were many people who did just that.

The case of Mrs. X caused me to decide to concentrate on treatment for these disturbances instead of merely studying the phenomena themselves. Soon after, I was called in as a psychoanalyst for Miss Y. The scene was a 300-year-old cottage near London.

For eight months prior to my appearance

[Continued on page 150]

**DARKNESS MEANS
... DANGER**

**Protect yourself after dark
with REAL LIGHT**

**GUARANTEED
BY OLIN**

Specialists in electro-chemistry and metallurgy:

- Winchester Repeating Arms Co.
- Bond Electric Corp.
- Western Cartridge Co.
- Liberty Powder Co.
- Western Brass Mills
- Equitable Powder Mfg. Co.
- Columbia Powder Co.
- Egyptian Powder Co.
- Texas Powder Co.

OLIN INDUSTRIES, INC.

I Psychoanalyze Ghosts

[Continued from page 149]

knockings were heard on the front door between 1 and 2 a. m. Footsteps approached and the knocker was lifted. Then the cottage would resound with banging. Later, the ghost entered the house and made doors open by themselves and food disappear. The dog cowered in the shadows and the cat ran around in panic hurling herself against the window in an effort to escape.

I lost no time in informing Miss Y that she was probably haunted by her own ghost. While she had been successful in keeping some unhappy memories from entering into her consciousness, she had failed to keep them bottled up. The disturbances were a symptom of something she refused to face.

Miss Y told me her life story and I explained to her step by step just how her past was connected to the ghostly happenings. As she understood and accepted the relationship, she acted upon it.

When the knocking on the door became very loud, she put out a sign: "Please ring the bell." And the ghost never knocked again. Little by little, as we unraveled the case, the Poltergeist stopped and finally vanished altogether. Soon, Miss Y was in perfect health again and the ghosts have never been heard of since.

Yes, I have met the Poltergeist on many occasions. But only once was I ever physically harmed by one. It was by a living Poltergeist. Lajos Pap, a Hungarian spiritualist who snatched things from space—snakes, frogs and other crawling things.

We invited Pap to give a seance at the Institute and we were a bit wary. The London newspapers really went wild. WATCH YOUR GOLDFISH TONIGHT was the warning they gave their readers on the evening of the experiment. Pap had produced a snake after a search by Will Goldston the famous magician so what was to stop him from apportioning a crocodile?

But, once he went into a trance, there was no telling what his alleged spirit guides would do.

I suspected something was wrong and apparently so did Mr. Pap's guides. For they slapped me on the mouth during the seance (through Pap's hand of course). Then they banged his head against the wall with such force that he suffered a concussion. That did not deter me, however, from revealing what I had discovered—the snakes did not come from thin air but from a belt, hidden in the loose folds of his abdominal flesh!

I did have a close shave a few months ago, though. And it was right here in this country.

A ramshackle Catskill cottage was supposed to be haunted by ghosts.

I found the mirrors decorated with portraits of the devil and messages such as "We are here. Beware!" My hosts swore that the mirrors had been clean when they left.

But I did not like the way they tried to get out of my hearing for whispered conferences. When they proposed a strange experiment, their purpose began to dawn on me. They wanted to put a kerosene lamp on the floor to see if the ghost would turn it over.

It seems the cottage was for sale but nobody would buy it. It was clear that if the cottage was burned down by ghosts, the insurance would be enough to make the venture worthwhile. I took a hasty departure before their strange "Poltergeist" had a chance to show me the arson in his soul.

Two hundred years ago noisy ghost disturbances would have been called witchcraft and punished by death at the stake. Today, I call them the Poltergeist Psychosis and suggest they should be doctored by skilled specialists.

Some authorities still cry fake and fraud, claiming that there are no such things as psychical phenomena. They point to the admitted cases of fraud as final proof. I say, certainly there has been fakery involved but that is not the whole story. There is more to the Poltergeist than mere tomfoolery. You cannot slough off unexplainable disturbances simply because they don't fit into any hackneyed psychological niche.

Many years ago, Tennyson wrote:

"The ghost in man, the ghost that once was man

But cannot wholly free itself from man
Are calling to each other thro' the dawn."

Well, the ghost in man has stepped out of the pages of poetry and fiction right into the realm of science! •

Auto Fuel from Manure

[Continued from page 69]

Methane from two cows is enough to heat the average farm house. With 20 head of cattle the farmer can operate a tractor for 120 days!

The present German shortage of steel flasks has led to the use of rubberized canvas bags. So, it's not a strange sight to see buses trailing huge gas bags behind them and cars which appear to be suspended from blimps.

Cow-power research is still going on and gradually the Germans are discovering that there's really much more to cow manure than meets the eye—or the nose! •



Remember Weldwood Glue when you need dependable wood-to-wood bonds. Quick and easy to mix with cold water . . . tremendously strong . . . stain-free . . . rot-proof . . . and permanent. At paint, hardware, variety stores and lumber yards. 15¢, 35¢, 65¢, 95¢ and larger sizes.

WELDWOOD PLASTIC RESIN GLUE

United States Plywood Corporation, New York 18, N. Y.

Auto Road Racing Comes Back

[Continued from page 145]

believe he never missed or broke a single egg during this fancy stunt—and never got caught by the cops.

In case you are wondering how a new car would do in a road race, I can tell you about the Ford. I spun around the Bridgehampton course a number of times in my own Lizzie, which happens to be a fast job. Just the week before, I raced it at another sport-car meet in Indianapolis. Against about 80 other stock cars, I finished third in a half-mile contest from a standing start.

On the Bridgehampton course with its tough, flat turns I practically tore the rubber off the rims. My best lap averaged just a shade over 64 mph. Briggs Cunningham's Ferrari turned several laps at 92, 93 and 94—or an average of about 30 miles an hour faster on typical American roads. Even the slowest unblown M.G. in the race was doing better than 70 mph. That gives an idea of what real roadability means, especially as my Ford can spot an unblown M.G. about 12 miles an hour on a straight stretch.

About 98 per cent of the cars belonging to American road racing fans are imports. Why? Because at this writing no American cars are

available that offer the buyer the performance of the cheapest sport car import, the M.G. (See my test piece in the January, '49, MI) A true sport car is just what the name says. In Europe auto fans use these jewel-like machines in a dozen different ways—from exploring, hill-climbing, cross-country races (and I mean rugged cross-country, as in steeplechase) and standard road races (like our Bridgehampton meet) to plain joy riding.

Now let's take one of those imported little M.G.'s and compare it to a Ford, for example. If you're a salesman who travels coast to coast, you'd have rocks in your head if you chose the M.G. over the Ford. The Ford is bigger, more comfortable and even considerably faster on straight stretches. It'll be in far better shape after 50,000 miles.

But is it better? Yes and no. The M.G. is a quality product, far superior to the Ford in every way from the standpoint of craftsmanship. With an M.G. you could beat the ears off the Ford on winding and secondary roads. The low steering ratio gives the driver much faster turning control. Combined with quality suspension, this steering setup gives

[Continued on page 158]

ALSO HANDY FOR WOOD HOBBYISTS!



Firzite

— to give you smooth finishes on fir plywood and other soft woods.

A pre-finishing material that seals the wood pores . . . tames the wild grain . . . virtually eliminates checking and grain raising. An excellent base for stain, paint or enamel. White or clear. White Firzite provides an easy, low-cost way to achieve "blond," "bleached" or "wiped" finishes



Satinlac

— to preserve the beauty of all woods.

An inexpensive coating for the proper finishing of Weldwood Hardwood Plywood and similar woods. Clear. No brush marks. Brings out all the natural beauty of wood. Does not yellow or darken with age.

FIRZITE and SATINLAC are available from paint, hardware and lumber dealers. Write us for leaflet on finishing plywood

10,000 Miles of Trouble

[Continued from page 64]

guarantee entry of Mexicans into this country without any risks. A pet trick is to lure the prospective immigrant to the river bank, collect a fat fee and assure the sucker that all he needs to do is wade across. He's told that he will find friendly guides on the American bank who will pick him up in a truck and carry him to his ultimate destination.

The guides are there, all right. But they're U. S. officers, delighted to escort the alien to jail as a preliminary to deportation.

Patrolmen engage in numerous gun fights because we deal with smugglers who shoot fast and shoot to kill. We try to halt them by calling out: "Federal officers—halt!" But often by the time the first syllable of the first word is pronounced, we're fired upon.

Once, the late Lon Parker, Border Patrolman along the Arizona line, came upon a party of three mounted Mexican smugglers. Although he was alone and without a rifle, he emptied his six-shooter at them. Then, facing fire from their carbines, he leaped from his horse and pulled one of the Mexicans out of his saddle.

Parker grabbed the rifle and wounded the other two, one of whom was captured and the other escaped. Later in his career Parker was killed from ambush.

The means by which aliens crash our gates vary greatly. Sometimes it's a simple transaction of paying the smuggler a few dollars to be put on this side of the border. Other times, it's an elaborate method by which the alien is provided with a head-tax receipt with forged signature, substituted identification picture and other illegal papers.

During the recent war, Charles A. Levine, once publicized as the first trans-Atlantic air passenger when he accompanied Clarence Chamberlain on his flight to France, figured prominently in a movie-like story of intrigue. It concerned the smuggling of a German man and his wife.

The plan was the brainchild of Peter Josef Walter, a German who had lived here for many years. With the aid of Levine and doctored documents, one of the aliens managed to reach Los Angeles while his wife went to Mexicali, just south of the border. From the proceeds of the husband's first job, Walter persuaded an auto dealer to sell the alien a new car. Its gasoline tank was removed and a section of the floor was cut away.

Next, the top portion of another car's gas tank was removed and secured beneath the hole in the floor of the new car. A lid was fashioned to cover the hole and a rubber mat cleverly concealed all alterations.

A small, temporary gas tank was installed under the hood for actual operation of the smuggling car. And despite a summer temperature of 120 degrees, Walter succeeded in crossing the international boundary line at Mexicali with the German woman hidden under the floor.

Two months after the couple's illegal entry, both aliens were captured in San Francisco by Immigration and Naturalization officers. In rapid succession both Walter and Levine were apprehended. Levine was convicted of conspiracy to aid aliens to evade the immigration laws. Walter and the German couple pleaded guilty to the criminal charges of illegal entry.

Smuggling aliens by air isn't new either. As far back as 1927 a ring operating two planes succeeded in landing 70 Chinese aliens in the United States within a period of three months. However, a modern touch was added recently by a man who provided his customers with false documents for entry and then conveyed them from the border to the nearest inland city with an airport. He placed them aboard regular commercial airlines flying inland.

Secret of this fellow's short-lived success was his foresight in buying a batch of plane tickets in advance and arranging for the aliens to arrive at the airport only a few minutes before the scheduled departure. The confusion of last minute preparations before takeoff made it easy to load his charges aboard the plane. Later, he was caught and convicted.

If you're interested in the humorous aspects, you'll find enough screwy Border Patrol anecdotes to fill a book. For instance, a young Marine stationed in China fell in love with a beautiful Oriental girl. When his unit suddenly received shipping orders to return to America, the youth packed his sweetheart, an expectant mother, into a duffel bag and carried her aboard ship. During the entire Pacific crossing the girl hid in a gun storage room.

Upon reaching port, he again crammed her into the duffel bag and hustled ashore. Unfortunately, his fiancée wiggled a bit during the baggage examination and this was the tipoff to a Customs officer who dug her out of the bag. Incidentally, the U. S. attorney who handled the case decided that the ends of justice would not be best served by prosecution.

Aliens who try to crash our borders may be subversive, criminal or even diseased. But, in any event, all are breaking U. S. immigration laws and must be stopped. I can assure you that your Border Patrol is meeting the challenge. Day and night you'll find us keeping vigil over America's 10,000 miles of trouble. •

She'll Sell You a Worm

[Continued from page 75]

will be the \$15 for the worms. You can house them in old grape boxes which your grocer will either give you or sell for a dime. Fill the box with one third each of soil, manure and peat moss. Occasionally mix in table scraps to keep the worms fat and happy.

You may have trouble with your neighbors, though. "I've been raising worms here for 10 years but some of my neighbors still think it's unsanitary. Actually, it's more sanitary than garbage cans with lids ajar for cats and dogs to drag the contents through the alleys. We throw our garbage right on the worm pits and they turn it into clean, odorless humus within a few hours."

When you have enough worms to offer for sale, invest in a small advertisement in a garden magazine. Most of the earthworm farmers list their stock in the pages of Organic Gardening Magazine, published in Emmaus, Pa.

Advertising will be your only expense other than mailing costs. Your biggest contribution is your time. Your income will vary in proportion to the amount of time you can give.

Reports on the value of earthworms to the gardener are sometimes conflicting. But there's a California farmer who claims that with the help of extra worms he grew carrots so large that one could have filled four 1 1/4-pound cans. The same gardener claims to have raised four-pound parsnips.

Miss Warner has discovered an added advantage which should interest women. The handling of worms is a good beauty treatment for her hands. "Worms give off a natural oil that is excellent for the skin," she claims. "Research men are trying to figure out how to collect this oil or make it. When they do, someone will have a good money-making idea."

While Bernice Warner has brought fame to worms, the worms have done much for her, too. She's been in New York a number of times with them and recalls the time she appeared on the radio show Hobby Lobby.

In an effort to pep up his show, the master of ceremonies asked, "Miss Warner, did you ever hear a worm turn?" The question had hardly passed his lips when Miss Warner snapped, "Yes, many times. I've also heard them talk to themselves. They make a sound like running water."

Thereupon, she poured a few worms onto a sheet of thin paper and let millions of people in the radio audience hear them.

Now, she insists *her* earthworms are the only worms which ever broadcast on a nationwide hookup. And she's undoubtedly right! •

FREE PLAN

Tells How to Start
Your Own Business

FILING SAWS



Saws come from 20
- and 30 miles

"I rented a two-car garage and have all the work I can do. Some days I start 6:30 in the morning. I get work 20 and 30 miles from my place of business."
—Charles H. Smith.

Buys 3 Foley Filers in Year and a Half
"Since I started out with my first Foley a year ago last June I have progressed so nicely that I now have a fully equipped saw shop with three Foley Filers." — R. W. Persinke.

FOLEY FILED SAWS BRING NEW CUSTOMERS

Here is a steady repeat CASH business you can start in your own basement or garage in your spare time. Every saw you sharpen with the machine accuracy of the Foley Saw Filer is an ad that brings you more customers. S. M. Hollingshead wrote to us: "I am doing very well with my Foley Filer, and I am glad I invested in your machinery. It is very satisfactory and works very well in the small community in which I live."

You can file all hand saws, also band and cross-cut circular saws on the Foley Saw Filer. The adjustments are simple—there is no eyestrain—and you can start right away to turn out perfect cutting saws. "The first saw I sharpened with my Foley Filer came out 100%. I think it is a marvel of perfection."—writes Clarence E. Parsons.

FREE BOOK Shows How to Start

"INDEPENDENCE AFTER 40" explains how you can get business from hardware stores, home owners, farmers, carpenters, schools, mills, factories, etc. Just think—with a modest investment, no overhead, no stock of goods to carry, you can start right in on a cash business that will help pay the rent, buy groceries, or a new car. Start now—you can get IMMEDIATE DELIVERY on a Foley Saw Filer.



Send For FREE BOOK

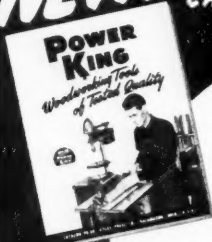
FOLEY MFG. CO., 915-9 Foley Bldg.
Minneapolis 18, Minn.

Send me free book "INDEPENDENCE AFTER 40!"

Name _____

Address _____

NEW! POWER KING CATALOG AND SHOP HINTS!



Just off the press! Send today for this unusual new Power King catalog. Gives you complete information about Atlas-built low-cost Power King tools for your shop plus helpful hints on types of joints for furniture and other projects. Gives facts about various woods, lists and describes Atlas Easi-Bild patterns. Write today.

SEND THIS COUPON FOR YOUR COPY

NAME _____
 ADDRESS _____
 CITY _____
 STATE _____

ATLAS PRESS CO.
 930 N. Piteher St., Kalamazoo, Mich.



MATCHED PRECISION TOOLS FOR WOODWORKING AND METALWORKING

IT'S FUN TO RUN

THE NEW DE LUXE O & R 23 even on a work bench!

Ideal for model airplanes, Thimble-Drome race cars, and boats. Combines new maximum power with O & R easy-starting and dependability. Revolutionary glow plug principle eliminates coil, battery, condenser. Now equipped with O & R heavy-duty rollerized main bearing for punishing grind of model operation. Precision, beauty, and durability in miniature! Sold by hobby dealers everywhere! If not available, order direct. Folder free.



POWER
 with the Pow-OR-Team
 "23" Assembled Engine \$19.95
 Pow-OR Team Propeller .45
 Pint No. 2 Glow Fuel .35
 Metal Fuel Tank Mount 1.50
\$19.65
 or with Engine Pak . . . 12.65
 For standard ignition, add \$1.00

OHLSSON & RICE, INC., Dept. 205
 Emery at Grande Vista
 Los Angeles 23, California

World Famous EASY TO ASSEMBLE PACKAGED BOAT KITS



18 models — 8 to 18 ft. 1949 line—many new models—increased performance—simplified assembly. All parts pre-cut, frames pre-assembled. Send 25c (coin) for literature. Literature plus booklet, "Plywood Boats," \$1.00.



BOAT PATTERNS—BLUE PRINTS

100 designs by Deed, Lord, Crandall, etc.; plank, steel, and plywood types 6-35 ft. Detailed blueprints, full-size paper patterns. Catalog 35c (coin). Catalog and booklet, "Boat Building," \$1.00

MARINE MART—DEPT. 25—BUFFALO 7, N. Y.

Hit . . . or Miss ?

[Continued from page 83]

check your rifle carefully. Try several 10-shot groups from a firm rest, and do everything possible to insure that you are holding properly. If you find one or two shots are going very wide, and you know you held correctly, check the bedding. If you are lacking in mechanical knowledge, take it to the local gunsmith, who should charge you very little.

Trigger pull is another cause of inaccuracy. On another occasion I received a rifle from a factory, having specified that it have a three-pound trigger pull. A check revealed that instead of three, it required a seven-pound pressure to let the hammer fall.

Another time I watched a shooter attempt to sight in a new rifle. He was a newcomer to the shooting game and had a new gun, a difficult combination. He scattered shots all over the target then asked me to try the rifle. One shot told me the trouble. The trigger pull was almost eight pounds. Those who can hold steadily on a target while straining at a trigger are the shooting exceptions, and we are not among them. Many makers equip their rifles with a small set screw behind the trigger which can be adjusted to regulate the amount of pull.

A trigger that "creeps" or has rough spots also can throw off your correct hold. This can be eliminated by "honing" the sear or by the use of a fine abrasive compound on it. Unless you know your business, however, it would be better to have the gunsmith handle this job for you. Too much honing can reduce the trigger pull to the danger point.

If you use a telescope sight, you may come up against another factor leading to inaccuracy. Over a period of time one or both of the blocks on which the sight is mounted may become loose. I have known many instances of this, most of them unrecognized. Often this will result in the first three or four shots going wild, and the shooter will mark it down to other causes, such as a cold barrel or improper holding. The increasing heat of the barrel, resulting from three or four shots, will sometimes cause sufficient expansion to tighten a loose block. But suppose you fire a dozen rounds and finally decide the rifle is properly zeroed. Then you wait a while, perhaps for an hour or more, before you fire for record. During this period the blocks have become loose once more as the barrel cooled and contracted. It will take another three or four shots before the expansion tightens them up. Those shots you have thrown away, so far as score is concerned. Check the tightness of these blocks each time, before you shoot, and do this when the barrel is "cold," not hot.

Another factor which destroys fine accuracy, especially at longer ranges where it becomes more noticeable, is "headspace." Too often this term is shrouded in technical mystery, but in reality it is quite simple. Headspace is merely the space between the base of the cartridge when chambered and the face of the bolt or breech block. Perfection would be to have no headspace, to have the cartridge base rest flush against this bolt head or block. But the friction on various moving parts as well as wear on the bolt head or block is certain, in time, to create some headspace. It takes quite a bit to cause a dangerous condition, but very little to bring about a loss of consistent accuracy. Headspace is measured in thousandths, and many shooters become wild-eyed the minute anyone becomes technical and speaks in such terms.

An error of a few thousandths of an inch at the bullet's starting point can mean an error of several inches at the target, the number of inches depending upon the range. An old gunsmith told me a story recently which illustrates the mystery of such tolerances to the average shooter.

It seems there was an apprentice machinist who became quite impressed at the fine tolerances at which his craft worked, and he wanted to impress a friend with the accuracy necessary in his job. "Why," he pointed out, "when we use a lathe we turn out work so fine that it must be exact down to two-thousandths of an inch. You probably don't realize what that means. Do you know how many thousandths there are in just one inch?"

His friend shook his head.

"Millions of 'em," was the reply. "Millions of 'em!"

Uniformity in seating the cartridge in the chamber is important to accuracy, and in one sense the space between the base of the cartridge and the bolt head is an extension of this chamber. For this reason, the manually operated rifle normally is superior to the semi-automatic or autoloading rifle. The manually operated rifle, if operated slowly and deliberately, will chamber a cartridge uniformly and, provided the headspace is properly adjusted, will deliver uniform accuracy. All other things being equal, of course.

Several factors influence the seating of the cartridge in the chamber of the semi-automatic rifle. For example, when the first round is loaded in the chamber, succeeding rounds are loaded with an increased thrust until the magazine is empty. As the carrier moves forward in the loading process it is affected by the friction of the top cartridge in the magazine. As each round is fired this friction is reduced proportionately with the reduced

[Continued on page 156]



SAVE MONEY—

make it with EASI-BILD* Full-Size Patterns!

SAVE MORE than ½ store cost—build this 6-foot Workbench and Tool Chest yourself! Easi-Bild Full-Size Patterns require no special tools or skill. Just trace pattern on wood; saw, and assemble with one of the CASCO Glues described below.

*Copr. 1949, Easi-Bild Pattern Co.

How to choose a glue:



For boats, outdoor furniture, sports equipment—joints that must withstand outdoor exposure—**CASCOPHEN** (Resorcin Resin Glue). The first completely durable glue available to homecraftsmen.



For furniture, toys, heavy-duty home repairs—use **CASCAMITE** (Urea Resin Glue) where you want a light-colored or mold-proof glue line. Use **CASCO** (Casein Glue) for loose-fitting joints, general heavy-duty jobs. Both easily mixed in cold water.



SEND COUPON FOR WORKBENCH AND TOOL CHEST PATTERNS TO:

Casco Pattern Dept. MI-99
P. O. Box 215, Pleasantville, N. Y.
Enclosed is \$..... for material checked below:
 Handy Workbench, Pattern No. 15—25¢
 Tool Chest, Pattern No. 71—25¢
 24-page Pattern Book illustrating 94 pattern projects—20¢

Name _____

Address _____

City _____ Zone _____ State _____

THE BORDEN CO. • CHEMICAL DIVISION
Makers of Casco Glues

Easy and Cheap to Operate

SAVE TIME, WORK, MONEY!

SHAW DU-ALL

and "PEPPY PAL" TRACTORS

PLOW

CULTIVATE

These rugged walking or riding tractors are ideal for farm, truck garden, orchard, poultry farm. Operate on a few cents an hour. A child can handle them.

DO DOZENS OF JOBS Both riding and walking tractors quickly and easily plow, cultivate, harrow, disk, bulldoze, spray, haul, grind, saw wood, etc.

LOW FACTORY PRICES Buy direct or through your dealer. Year's guaranteed.

RIDING TRACTORS 4 models from 6 to 12½ H.P., 58 in. wheelbase, 36 to 62 in. wide, 24 in. plant clearance. Hand or electric starter. Walking Tractors 1¼ to 5 H.P.

FREE Illustrated folders giving complete details and price lists—write today!

SHAW MFG. CO. 2709 FRONT ST., GALESBURG, KANS. 66886 NORTH 4TH ST., COLUMBUS, O.

See Our Exhibit At

Missouri State Fair, Sedalia, Mo., Agricultural Bldg., Aug. 21-28.

Indiana State Fair, Indianapolis, Ind., Lot #722, Machinery Field, Sept. 1-9.

Kansas Free Fair, Topeka, Kansas, Spaces #101 and #103, Industrial Bldg., Sept. 10-16.

Oklahoma State Fair & Exposition, Oklahoma City, Okla., Spaces #9 and #10, Liberal Arts Bldg., Sept. 24-30.

State Fair of Texas, Dallas, Texas, Space #414, General Exhibits Bldg., Oct. 8-23.

State Fair of Louisiana, Shreveport, La., Spaces #55 and #56, General Exhibits Bldg., Oct. 22-31.

AUTOMOBILE RACING BOOK (Fifth Edition) Revised

12 Chapters. 77 Illustrations dirt track, championship and midget cars. How to build engines, chassis and bodies. Why the fast ones are fast and how to make them fast. How to speed up Ford V-8 cars and rebuild Ford A and B engines. How world's record cars are built. Official AAA midget rules and International formula. Order NOW! \$1.00 Post-paid; \$1.50 C. O. D. Money back if not satisfied.



RAY F. KUNS Dept. A-47 Cincinnati 27, Ohio

Genuine

HIDE GLUE

is best for all **WOOD WORK**

FRANKLIN LIQUID HIDE GLUE

NO ODOR
NO MIXING
NO HEATING
NO CHILLED JOINTS

at most hardware stores

Used by furniture mfgs., craftsmen, schools. If dealer cannot supply, send 20c (postage and wrapping) to THE FRANKLIN GLUE CO., Columbus 15, O.

15c extra-large TUBE

Hit . . . or Miss ?

[Continued from page 155]

pressure of the magazine spring. Therefore, each cartridge is seated in the chamber with a slightly different force. While this is extremely minor, even minor things play a part in consistent accuracy. While the semi-automatic rifle can be turned out to match perfection, few of them are, for they are designed for field rather than range shooting.

Really precise headspace adjustment is important to accuracy, and any really capable gunsmith can take care of this matter. But bear one thing in mind. Not every mechanic who hangs out a "Gunsmith" shingle is worthy of that title.

The very method employed in cleaning a rifle can affect its accuracy in many instances. It is a sound practice to make it a habit of cleaning a rifle from breech to muzzle rather than vice versa. While some barrels are "crowned" at the muzzle (to protect the end of the bore) even this will not prevent damage if a cleaning rod is carelessly employed. Insert a rod carefully and use no harsh abrasives. Burr the bore at the muzzle and you cannot hope for real accuracy.

While many do not realize it, the temperature of the air has a definite affect on accuracy. Suppose you sight in your deer rifle on a warm September day, and get it zeroed at 200 yards. (For western shooting, of course.) You then may touch off a few shots at 250 and 300 yards, so you will know where to hold at varied ranges without having to adjust sights for this distance. Then you put the rifle away with great care and wait for the opening of deer season.

Then November rolls around and you are off for the hills. When you zeroed in the rifle the temperature was about 85 degrees, but now it has dropped down to 20 degrees above zero, and you are suddenly offered a shot at 300 yards. You remember how high to hold for this distance, so you let go. Much to your surprise the bullet cuts under the deer's chest, too low for a hit.

The extent of this drop, in inches, varies with different calibers and loads at various ranges, but to be certain of accuracy, sight your rifle in under temperature conditions as similar as possible to those under which it will be fired.

Many shooters, myself included, want a sling for their hunting rifle. In most instances this sling is expected to perform only one function, a means of carrying the rifle comfortably. It is not intended as an aid to shooting, as is the sling on the match rifle. For this reason many rifles have a sling swivel attached to the barrel above the fore-end. The match

rifle, you will note, has the sling attached at the wooden fore-end with no contact with the barrel. If the sling swivel is attached to the barrel, and you attempt to use the sling as an aid to holding, your shots will be anything but accurate. The tension placed on the barrel at an angle affects both the bedding and the natural vibration of the barrel, and will spoil the shooting.

On many occasions I have seen shooters rest the barrel of a rifle on a stone wall, fence post or some other solid object in order to obtain a steady rest for a long shot. This supplies a steady rest, but what it does to accuracy must be seen to be believed.

Another factor that results in many misses is the ammunition employed. Two identical rifles turned out by the same factory at the same time may require different loads to reach peak accuracy. One may give the best all-around accuracy with a 150-grain bullet, the other may perform best with a 165-grain bullet. Why this is so is a ballistic puzzle, but it is an incontrovertible fact. When you get a new rifle, spend a few dollars on ammunition. Decide what load you want and then try a few heavier and lighter loads. You will find each gives a different performance, and you can settle upon the one you like best.

I know of many instances in which hunters have zeroed in a rifle for a certain load and later departed for the hunting trip taking along another load. If your rifle is sighted in for a 160-grain bullet turned out by Winchester, don't take off for the woods with 180-grain Remington cartridges. The trajectory of the two cartridges is quite different, and thousands of deer have bounced off untouched because the shooter made this mistake.

Also, don't handle cartridges as though the bullets were made of case-hardened steel. The deformation of the tip of the bullet is a common cause of inaccuracy. Many of the big game loads have soft point bullets to bring about the proper expansion upon penetrating tissue. Load such cartridges carefully in the magazine and don't jam them carelessly into the chamber. Many factory made rifles are turned out with a sharp shoulder on the breech, which is capable of shaving off or causing a deformation of the soft point.

One more thing—avoid "cant." Many shooters fail to recognize the importance of holding a rifle level, then wonder why their shot are right, left or low. At short ranges on big game, a little cant will not be disastrous, but as the range increases the effect of cant increases.

So, it is apparent that there are a number of factors which lead to inaccurate shooting—other than normal human error. The latter you cannot change, but by employing reasonable care and attention you can eliminate many of the basic causes of inaccuracy. •



**YOU
NEED
THESE
THINGS**

**IN THE
FILES
YOU BUY:**

STRAIGHTNESS — for holding the filing stroke "to the line" when necessary.

ACCURATE CUT — teeth of even height, sharpness and spacing — to assure full, smooth bite.

UNIFORM HARDNESS — to avoid "skips" and "grabs" and uneven wear.

PROPER BALANCE — for steady filing strokes.

GOOD STEEL — for long file life.

AND YET you don't have to be a "file expert" to detect these qualities . . . you can be sure of getting them by simply asking for Nicholson or Black Diamond brands. They have *all* the features that enable the world's foremost file manufacturer to guarantee you *Twelve perfect files in every dozen*. Good hardware stores prefer to sell them because they give you the most for your money.

• **FREE** 48-page book, "FILE PHILOSOPHY," on kinds, use and care of files. Send for your copy.



NICHOLSON FILE CO.
49 Acorn Street
Providence 1, R. I.

(In Canada, Port Hope, Ont.)



**NICHOLSON
FILES** FOR EVERY PURPOSE



New
LABOR
SAVER
for the
HOME



**Electric
"MOTO-SANDER" POLISHER**

ONLY \$14.85
POSTPAID

Say "Good-bye" To Hand Sanding & Polishing! Let speedy "Moto-Sander" do the work while you just guide it. Use for light sanding jobs—finishing, refinishing, redecorating. Moto-Sander quickly and smoothly sands furniture, walls, woodwork, wall board, plaster joints; boats, workshop projects, etc. Straight-line action (non-rotary) will not burn or scratch surface. Also ideal for fast, effortless polishing of furniture, refrigerator cabinets, automobiles, other waxed surfaces. There are dozens of time and money-saving uses in every shop and home for this inexpensive machine. Moto-Sander is the lightest, most practical electric sander & polisher. Gets into tight corners—7,200 strokes a minute... weighs only 3½ lbs. Furnished complete with 6 sheets assorted grade Garnet Paper for sanding, plus felt pad and sheepskin for wax polishing. Operates on 110-120 V., 60 cycle A.C. Thousands of satisfied users.

WHERE TO BUY IT: Buy Moto-Sander at your dealer's. If he cannot supply you, send only \$14.85 (check or M.O.) and we will ship postpaid; or send only \$2 now, and pay postman balance plus postage. Your Money Back If not delighted after 5 days' trial.

DREMEL MFG. CO. Dept. SP149-J Racine, Wis.



AMAZING PERMANENT MAGNETS—WILL NOT WEAKEN! NON-ELECTRIC. Retrieve guns, tackle, tools and other steel items from lake, river, plating tanks, drains or other hard-to-reach spots. Recover drills, taps, etc. from floor sweepings. Clear alley of harmful tacks, nails. Many other uses listed. Pays for itself quickly. GUARANTEED. Try any magnet one week. Money refunded if you are not well-pleased: Cat. #M430—Has a pull of 125 lbs. on a flat steel block...\$7.50 Cat. #M410 (4 lb. pull)...\$2.50 Cat. #M325 (10 lb. pull)...\$1.10 Cat. #M500...Hobbyist's assortment of seven small magnets...\$1.10

RONALD EYRICH, 2566 N. 49th St., MILWAUKEE 10, WIS.



Print Your Own

Cards, Stationery, Advertising labels, circulars, photo and movie titles, church work, tags, etc. Save money. Sold direct from factory only. Raised printing like engraving, too. **Print for Others, Good Profit.** Have a home print shop. Easy rules applied. Pays for itself in a short time. Write for free catalog of outfits and all details.

KELSEY PRESSES, N-9, Meriden, Ct.

ARC WELDING
FOR PROFIT OR PLEASURE

60 LBS. OF READY MADE PARTS

Only \$74.95

BUILD YOUR OWN HEAVY DUTY WELDER SAVE BUY ONLY NECESSARY PARTS

All parts Ready-Made and easy to assemble. You can do all around welding on steel, cast iron and other metals after only a few hours practice. Illustrated instruction manual included. Sold on 30 Day Money-Back Guarantee!

FREE: Write today for fully illustrated Pamphlet, K-9

ATOMIC ARC WELDER CO.
1935 So. 15th St., OMAHA, NEB. or 220 AC.

Gives 100% penetration. Welds are stronger than original metal. Operates on 110

Auto Road Racing

[Continued from page 151]

you superior handling qualities which make it a far safer car to drive—provided you really know how to drive.

What's the answer? The Ford and the M.G. are two entirely different breeds of cats. The imported jobs offer the man who has a big pocketbook, and a lot less than 12 kids, a car that warms his sporting and adventurous nature. American roads are so superior to those of other countries that we can get along with poor-handling crates. Those sport-car men, though, really have fun. Most of them do know how to drive—a lost art here.

Look at the Collier brothers, sons of the famous advertising king, Barron Collier. These boys are foreign-car collectors. They started the Sport Car Club in the early 30s. Sam Collier won the second race at Bridgehampton, a 48-mile affair, at an average speed of 81 mph, driving an M.G. belonging to Briggs Cunningham. Miles Collier even gave the Ferrari—which was way out in the lead for the first 75 miles until it broke an oil line—a run for its money in the 100-mile third race.

Then there's Cunningham himself, who had three cars entered, two M.G.'s and the Ferrari which was imported from Italy for this event. He's not only the hardest working mechanic in his racing stable but the best. He can completely tear down a complicated double-overhead cam engine in a night and at dawn have it singing like a nightingale. He also knows how to drive these machines. A tight spin at 100 on a flat turn is just so much rubber dust in the air to him.

Today's sport car enthusiasts in this country are a group of real sportsmen who love automobiles as they should be, not as utilitarian, inanimate, functional loads of steel stampings. They defiantly resist the regimentation that is being thrust upon us by the major companies of the U. S. today. They refuse to buy the family jalopy, closely resembling a pregnant bus, the only production choice offered in America. No longer can we boast of the road-handling quality of American cars. We can only say this or that car is not quite as lousy as the other.

This fraternity of American sportsmen and automobile fans is ready and waiting for another Cord, Dusenburg, Mercer or Stutz—in fact, for anything that shows signs of the old-time American spirit.

Bridgehampton's big day was a fine tribute to the real auto fans. On Sept. 17, at Watkins Glen, the second American Grand Prix of sport cars will be run. If you are within 1000 miles of that New York town and happen to be a true-blue car fan like myself, come on over and meet others of your own kind. •

Hydra-matic Lincoln

[Continued from page 77]

was a tomato. The 12-cylinder L-head engine developed 135 hp when right. But it was fussy and temperamental. Nevertheless, the fact that a 1948 Continental will bring more today on a used car lot than a 1949 day-old Lincoln Cosmopolitan should prove this point.

I prodded one of the top men at Lincoln about this obviously screwy turn of events and was told that Ford lost close to \$600 on every Continental built because each was a hand-made job throughout. The only value Ford ever realized was the prestige of having the best looking automobile in the country. While I believe this officer's statement about losing dough on the low-dark-and-handsome, I also feel there should have been some way of retaining the Continental looks on a production basis. He told me we might see the Continental again in about two years. Last year they told me a year.

This year's Lincoln is basically the same as the original '49er with the exception of the Oldsmobile Hydra-matic transmission. The fact that these units are being bought from the competition is one for the books!

They told me that the American public wants automatic transmissions and since Lincoln feels Hydra-matic is the best of the type, that's what they are using. Unfortunately, I'm afraid they're right. However, this addition will not jump Lincoln back into the number one position on the hit parade. Some more changes are in order. I asked about overhead valving and was told that this was in the future books also. So, my little chickadees, let's look at the 1949½ Lincoln.

I was given my choice of cars with which to do anything I wanted and no questions asked. The Dearborn test track was cleared for my sole use. When I started pulling out stop watches, there was none of the usual "This car isn't right" or the obvious "Isn't broken in" or six dozen other dodges I'm used to getting. I spent close to an hour making acceleration runs and, believe it or not, when I told the engineer my figures, instead of saying there was something wrong, he stated: "That's pretty damn good time—better than we got out of it from 0 to 60."

Incidentally, the big 152-hp engine smooths out the Hydra-matic drive like a bowl of heavy cream. Though I know I could have built up speed faster shifting manually, it wasn't bad on pick up at all. With the acceleration tests over, I headed for the high speed rim and it was here that your Uncle Tom almost ended his testing days. I was hitting the narrow turns (about 12 feet wide), doing 94 or 95 mph

[Continued on page 160]

SAVE up to 85% IN WAR SURPLUS



CONTINENTAL
4 cycle-1½ to 2 H.P.
net weight 43 lbs.
L. Head

BRIGGS & STRATTON
Model "A"
4 cycle - 2.10 H.P.
IN ORIGINAL CRATES

ELLINWOOD
"44"
4.4 to 5 H.P.
A Real Buy!

\$47.95 \$64.95 \$69.95

POWER PARADE

Here's Loads of POWER for use on farms, in trailers, boats, light plants or shops. All Air-Cooled & complete with accessories such as fuel tanks, carburetor, ignition, air cleaner, etc. These gas engines are ALL NEW!!

ALL PRICED TO SELL!

Genuine ARMY AIR FORCES Sunglasses



HERE'S THE REAL MCCOY!
ARMY AIR FORCE 6 base. Precision Polished and Ground, Glare-Free lens with leather case that can be attached to belt. Gold plated adjustable frame. Pearlloid sweat bar and pads.

A real Palley \$17.50 Value for Only **\$3.95**

KLEER-VUE NIGHT DRIVING GLASSES

With 57mm yellow amber lenses. These lenses are 6 base PRECISION Ground and Polished to reduce Glare of headlights from on-coming cars, also to focus objects sharply and more clearly during night driving.

In Men's size or Ladies' Harlequin style. ND-1 \$16 VALUE **\$5.89**

SAME GLASSES but clip-ons. **\$4.59**



U. S. NAVY GOGGLES

New One Pc. Type Shatterproof Sponge Rubber Frame, Flexible Lens, Colored and Polaroid.

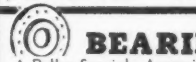
59¢



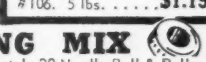
FILE MIX Ten Ass'd. Files of 6", 8", 10", 12", incl. 3 Vixens, ½ rnds, bastards, mills, etc. in 2nds and used but in good condition. 1 Vixen worth our price for entire mix. **99¢**



GADGET MIX Especially prepared for the HOBBYIST. Screws, Gears, Bolts and Nuts, Rivets, Spacers, etc. A gold mine. #106. 5 lbs. **\$1.19**



BEARING MIX A Palley Special.. Approximately 20 Needle, Ball & Roller New and Used - Sizes ½" to 4". Some of these cost the Govt. \$10 apiece. You've never seen such a value -- 5 lbs' . . . ONLY. **\$1.59**



DC GENERATORS For radio, light, & elec. systems. TYPE AMPS VOLTS
New G1 140 27 **\$17.95**
New T1 25 12 **\$13.95**
Used but guaranteed condition
E5A 50 12 **\$17.95**

NEW 1949 CATALOG
92 Pages - With Over 5000
WAR SURPLUS BARGAINS.
Full of Real Money Saving
Values !! Send 25¢ to cover
cost of Handling & Postage.

Order from this Ad. All sales final. All prices F. O. B. Los Angeles. Pay by M.O. or Check. P.O.'s accord. from D & B Rated firms - D2 or Better. ½ deposit with C.O.D.'s.

PALLEY SUPPLY CO.

DEPT. M-3 6321 SAN FERNANDO RD.
GLENDALE 1, CALIFORNIA

**FINE TOOLS
NEED
FINE OIL!**



• Lubricates
• Prevents Rust
• Cleans • Polishes

SOLD EVERYWHERE

3-IN-ONE Oil

Money Back Guar.

7x50 PRISM BINOCULARS
Precision Optics—Brand New

\$36*

6x50 Achromatic Field Glasses \$16*

* 20% Federal Tax

Send for Free Catalog of Binoculars, Telescopes & Microscopes

BROWNSCOPE CO.
Dept. 9L, 24 W. 45th St., New York 19, N. Y.

7x50
\$36
Illustrated

Pioneers **BENJAMIN** Leaders

AIR RIFLES WITH SAFETY LOCK AIR PISTOLS

SEND FOR FREE FOLDER OF LATEST MODELS TODAY

If you want a REAL GUN for PRACTICAL USE inside or outdoors, get a SAFE—CLEAN—ECONOMICAL—BENJAMIN with Adjustable Power and Amazing Accuracy. Use BENJAMIN H-C PELLETS for BEST RESULTS in all rifled models. WRITE AT ONCE.


BENJAMIN AIR RIFLE CO., 814 MARION ST., ST. LOUIS 4, MO.

**DRAINS CIRCULARS, WASH TRAYS
CIRCULATES OIL**

Pumps 1800 GPH 300 gal. 30" high, uses 1/8 to 1/3 HP motor. Will not clog.

\$6.50

Postpaid if cash with order.
(Add 50c for west of the Mississippi.)
Thousands in use since 1936



LABAWCO PUMPS, BELLE MEAD 30, N. J.

REAL DIESEL ENGINE

\$2.95



WE'RE CRAZY, they tell us, giving away a real diesel engine, complete with cylinder and piston, carburetor, crankshaft and connecting rod. All parts completely machined, ready for easy assembly. **ONLY \$2.95.** How do we do it? We're selling thousands of **DEEZILS.** So production's up; costs tumble down. **DEEZIL** is a precision engine. Actually runs at 7500 RPM. Produces 1/7 HP.

Ideal for planes, boats, midget cars.
Send \$2.95 plus 25c postage today.

GOTHAM HOBBY CORP.
107 East 126th Street New York 35, N. Y. Dept. M

Hydra-matic Lincoln

[Continued from page 159]

when it happened. The Ford track is three miles around. During the circuit, you snake through S-turns and varied banked grades. Naturally, at some time or other during a lap you are heading at each compass direction. By a freak phenomenon, I was between 150 and 200 feet of a steep curve when the sun hit my banked windshield in such a way that I could see nothing but a ball of light before me. At such speed you cover 150 feet in an eyelash flick and, without seeing, it was impossible for me to gauge when to start pulling in. Somehow, I caught sight of the track contour out the window and got around. Five minutes later, going over the same spot considerably slower, I failed to catch this light again—the sun had moved on. This may be possible only on a slanted track around June 21 just before noon—but next year I'll go fishing that week.

I found that the Hydra-matic with its lower gearing is slightly slower at top speeds than the previous model with overdrive. The best speed I could make was 96.6. On a long straightaway, the Lincoln would build up a bit higher. The regular Lincoln is faster than the Cosmopolitan due to less weight.

With the speed test over, I became the first magazine writer to use the new Ford hill test, built in the middle of the proving grounds. This is the toughest hill test on any proving ground in Detroit, the main grade being 31 per cent. On this grade, I went halfway up, turned off the switch and put on the emergency hand brake. To my amazement, the hand brake held. You can count the cars with this type of parking brake on the fingers of a two-fingered hand.

After this, I started the engine, put the Hydra-matic in low range and, without an inch slippage or apparent strain, it continued up the grade and over the top. This was really a remarkable feat for such a large car. After the hill climb, I drove through the water troughs, trying to conk it out, and then I hit the dust roads trying to make it slide. I did notice this improvement over last year's model—the squealing of tires on turns was not in evidence. The answer—more pressure.

The Lincolns are good big cars. They perform remarkably well and are extremely comfortable to drive. The gasoline consumption has gone up slightly with Hydra-matic, but then any guy who can afford to buy a Lincoln shouldn't worry about that.

But, if Lincoln really wants to give its competitors a hard time, let's see them turn out a brand new Continental with a new valve-in-head engine! •

NOW a DYNAMIC HEAVY DUTY INDUSTRIAL WELDER

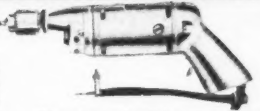
FOR AUTO—HOME APPLIANCE & FARM IMPLEMENT REPAIRS! \$28.50
WORKS ON IRON, STEEL & other metals . . . does work you'd expect from a larger, costlier machine, portable, easily carried; OPERATES FROM ANY properly wired 110 VOLT LINE. Also available for 220 volt operation at slight additional cost; has 5 metallic & carbon arc welding heat stages. **EASY TO OPERATE TRANSFORMER TYPE WELDER—If inexperienced you can learn to do professional work by following the SIMPLIFIED WELDING & OPERATING INSTRUCTIONS FURNISHED—comes complete ready to operate with helmet, rods, cable, instructions. SAVE TIME AND MONEY—Do your own welding—Just a few repair jobs will pay for this machine. A practical and profitable machine tool for any workshop. Make money doing repair work for others. Costs a few cents to operate.**



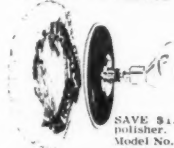
SPECIAL GIFT OFFER! WORTH \$6.80
ARC TORCH YOURS at NO EXTRA COST!
 Write today for FREE DETAILS, ARC TORCH GIFT OFFER and DYNAMIC WELDER 10-Day Trial Offer. **DYNAMIC WELDER CO., Dept. LTD-39, 15 EAST 23rd STREET, CHICAGO 16, ILLINOIS**

1/4" ELECTRIC DRILL AND POLISHER

portable high power electric drill . . . fully guaranteed . . . approved by Underwriters' Laboratories, Inc.
 Model No. 77 . . . drill with hand chuck **\$12.95**
 Model No. 250 . . . drill with Jacobs gear chuck **\$14.95**



7" sander and polisher . . . for use with electric drill. Includes polishing bonnet . . . sanding disc . . . 5" rubber disc . . . steel arbor. **ONLY \$19.95.**



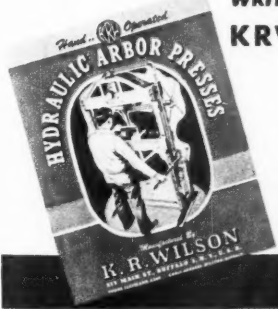
Cash with order (Postpaid) or C. O. D. only on any purchase. Money refunded if not completely satisfied.

SAVE \$1.50 by purchasing either model drill and polisher.
 Model No. 77 and polisher **\$13.40**
 Model No. 250 and polisher **\$15.40**

STEM DISTRIBUTING CO., 6408 Euclid Ave., Cleveland, Ohio

\$4.95 REAL ENGINE VALUE

A miniature gas engine that really operates. Thousands of Buzz "B" gasoline engines have been sold at twice the price. Now is your chance to buy a real 1/8th H.P. gas engine for only \$4.95. Turns up over 8,000 rpm. For boats, planes, midget cars, etc. Guaranteed and ready to run. Includes Champion spark plug and tank. Send only \$1.00, engine shipped "out-of" for balance, same day. Write for free catalog or SEND 10c for NEW MAMMOET ILLUSTRATED CATALOG OF THOUSANDS OF HOBBY ITEMS America's Hobby Center, Inc., Dept. A-99, 156 West 22 St., N. Y. 11



WRITE FOR YOUR FREE COPY OF THE NEW KRW HYDRAULIC PRESS BOOK

Describes all manner of Production and Shop Work on KRW Hydraulic and Bench Type Arbor Presses. 32 pages illustrating the new KRW Hand-operated, Electric-operated and Air-operated Hydraulic Presses. *Write for your copy today.*



K. R. WILSON, DEPT. 53, 215 MAIN ST., BUFFALO J, N. Y.

FREE ALLIED'S LATEST RADIO CATALOG!

Radio's Biggest Values
SEND FOR IT TODAY



Everything in Radio At Lowest Prices!

See the latest ALLIED Catalog for greatest values in Television receivers, latest radios and radio-phonos, high-fidelity custom sound components, recorders, sound systems, Amateur receivers and station equipment. Everything for Builders and Experimenters—thousands of parts, tubes, test instruments, tools, books, diagrams and kits. World's largest stocks—all at really low-money-saving prices. Get your Free ALLIED Catalog now!

The DEPENDABLE Radio Buying Guide

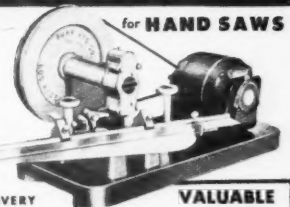
FREE CATALOG Send for it

ALLIED RADIO

833 W. Jackson Blvd., Chicago 7, Ill. Dept. 6-J-9
 Rush FREE ALLIED Catalog.
 Name
 Address
 City State

AUTOMATIC RETOOTHER

MAKES NEW PROFITS



Cuts new teeth in 50 seconds—any size 4 to 16 points. Old teeth fall off as chips. Easy to operate. A perfect job.

IMMEDIATE DELIVERY
BURR MFG. CO.
 8935 VENICE BLVD.
 LOS ANGELES 34, CALIFORNIA

VALUABLE BOOK
 Order Burr's Blue Book of Costs to Coast prices for saw shop services. **25c**





Hunter bags new CROSLLEY record

"I can vouch for Crosley cars being tough and capable", says E. B. Walters of Oxford, Pa. He recently took a hunting trip to the Canadian wilds in his Crosley Station Wagon, pulling a trailer with 1,500 lbs. of equipment, including a boat! (We don't recommend such use of a Crosley... but it certainly demonstrates stamina!)

See the new Crosley with CIBA (cast-iron block) engine and Hydradisc (airplane-type hydraulic) Brakes. Prices range downward from the Station Wagon at \$929 F.O.B. Marion, Ind. For catalog of 5 new models, write Crosley Motors, Inc., 2530-TJ Spring Grove Ave., Cincinnati 14, Ohio.

EROSLLEY
a FINE CAR
You see them everywhere!



WORLD'S LOWEST PRICED ADDING MACHINE

FREE TRIAL Vest Pocket Size
\$295
IDEAL FOR BUSINESS AND PERSONAL USE—GUARANTEED ACCURATE. Not a toy. Operates with only a finger flick. Adds, subtracts, multiplies, divides. Counts up to one billion. Pays for itself only sell over and over. Ideal Gift—for Business, Income Tax and School use. **SEND NO MONEY** MONEY BACK GUARANTEE. Send name and address. Pay postman only \$2.95 plus postage. (Send full cash if outside U.S.) Beautiful rich-looking Leatherette Case included at no extra cost. Money back in 10 days if not delighted. AGENTS WANTED.

DEPT. 253, P. O. Box 248
CALCULATOR MACHINE CO., (Incls.)
Glenview, Illinois

BUILD OR BUY A LAWN SWEEPER

NO TIRESOME RAKING...

The quick and easy way for cleaning your lawn. Picks up leaves, grass, acorns, sticks, and combs the grass. Easily built from available parts. Mail 35c for complete plan telling you how. Catalog listing parts and factory built sweeper, sent free with plan.

LEJAY MFG. CO. 114 Lejay Bldg. Minneapolis 8, Minn.

HUNDREDS OF ITEMS AND IDEAS FOR THE WOODWORKER

BIG NEW 144 PAGE CATALOG NO. 16

of hard to find woodwork items, hardware and supplies; the finest craftsmen catalog; Harold Hunt ever published—32 rare and fancy woods in natural colors—also in color; 43 matched veneer designs, multi-colored handings, inlays, overlays, scroll patterns, etc. Price 15c, retained on first order.

CRAFTSMAN WOOD SERVICE CO. 2729 S. Mary St. Dept. G-9 Chicago 8, Ill.

HARD TO FIND LUMBER

Log Grade Kiln Dried
A Board or a Carload
UNEQUALLED BARGAINS
Walnut, Mahog., Cherry, Maple, White Hardwood, And Softwood, Poplar, Fir, Spruce, Oak, Aromatic Red Cedar.

BUILD YOUR OWN POWER LAWN MOWER

WHY PAY MORE FOR FACTORY BUILT MOWERS?

WRITE FOR FREE BUILDING INSTRUCTIONS The Rite-Way Mower Attachment Ball Bearing



SAVE MONEY SAVE TIME

Now anyone can save time and effort mowing field or lawn by building their own whirl type power mower. Build according to your own ideas and needs at small cost. Cut close to fences, walks, buildings, etc. Build in short time with parts and instructions we furnish. Requires no special tools. WRITE TODAY FOR FREE INFORMATION.



IT'S FUN TO BUILD

T & H MFG. CO., Inc., Dept. MIA-9
811 E. 31. Kansas City 3, Mo.

Gadgets

[Continued from page 57]

him up in a small laboratory and gave him the chance to devote all his time to perfecting the process.

Eventually, Durrani was satisfied with his system of pre-cooking and drying rice so that the consumer would have no trouble storing it and could prepare it easily in a couple of minutes.

With an electric stove, one dish, one copper pan and some rice—carried in a 39-cent bag bought in a drugstore—Durrani went to New York and visited the offices of General Foods. He set up his materials on the desk of the company's head research executive and gave a convincing demonstration. The inventor was given a retainer, a royalty agreement was worked out and a patent was obtained in Durrani's name.

Since then, General Foods has invested more than \$1,000,000 in the process—\$650,000 of it for erecting a new plant to turn out "Minute Rice" at Houston, Tex. There are other plants at Orange, Mass., and Battle Creek, Mich.

All the "Minute Rice" made during the war went to the armed forces. Market tests were conducted in Atlanta and Philadelphia in 1946, and national distribution of the product was achieved early this year.

And of course Ataullah Durrani, the lone researcher, is beginning to cash in on his discovery in a big way! He is one of countless inventors to hit the jackpot.

Another man who made a highly profitable find in the food field in recent years is Leo Peters, originator of the "Pak" margarine package, made out of plastic and containing a capsule for coloring. By merely kneading the "Pak," a housewife can give a pound of margarine the appetizing hue of butter. It took Peters a long time to put the idea across, but once it was accepted by manufacturers he began collecting royalties estimated at \$1,000,000 a year.

Earlier, Clarence Birdseye topped that figure by a wide margin and made "Birdseye" a household name. In 1916, while engaged in fur trading in Labrador, Birdseye discovered that when a fish was quick-frozen in arctic temperatures it could be thawed out, cooked and eaten weeks later and still taste as though it had just been yanked from the water.

Back home in Massachusetts, he began experimenting with the preservation of seafood through artificially induced subzero temperatures. It took years, but finally his method was effective. It not only worked on fish but on berries, vegetables, meats and almost every

other kind of perishable food. He set up independent companies to market his frozen produce. In the end, he sold his patents, name and services as a consultant to General Foods for \$22,000,000!

At last reports Birdseye was still seeking new worlds to conquer; he was experimenting with the dehydration of foods.

But you don't have to discover anything of such importance as frozen foods to be a successful inventor. There are thousands of examples of seemingly unimportant twists or gadgets that have made fortunes. Take, for instance, the fellow who thought up the movable top for collar studs. For years his royalties amounted to \$20,000 per annum.

Then there was Clarence Collette of Amsterdam, N. Y., who got the idea of putting ridges or nicks in paper clips so that they would hold sheets more securely. He cleaned up in a big way because stenographers found his paper clips were better!

Speaking of stenographers, incidentally, the majority of them use the Gregg shorthand system. Just the other day, in an accounting of his will, it was revealed that the man who devised the system—John R. Gregg—had left an estate of \$3,250,000!

Years ago, Robert Gordon of Plainfield, N. J., became irritated because the wooden, cloth-covered buttons of his garters failed to hold his socks up properly. He patented the idea of using rubber or rubber-covered buttons—and the royalties enabled him to live like a prince!

The list could be continued indefinitely. You don't have to be an Edison to make your fortune in the field of invention. You can be plain Joe Doakes with an inspiration and the patience to develop an idea to perfection.

Of course, only a small percentage of the 35,000 patents taken out in Washington each year ever result in big payoffs for their owners. Holding a patent is like buying a pari mutuel ticket on a horse race—but at tremendously increased odds. It's interesting to examine some of the newcomers in the Inventors' Sweepstakes, and to speculate on their chances for success.

One of these is the Polaroid Land Camera, which went on the market a few months ago. Invented by youthful Edwin H. Land, president of the Polaroid Corporation of Cambridge, Mass., this camera makes possible what is described as "a new kind of photography as revolutionary as the transition from wet-plates to daylight-loading film."

Carrying its own chemicals, the Land camera automatically develops the film and turns out a contact print in less than a minute after a picture has been snapped. Obviously, the elimination of the old-style

[Continued on page 165]

Cracked Water Jacket SEALED TIGHT



Use Smooth-On No. 1 Iron Cement to seal cracks in cast metal parts such as water jackets, crank cases, gear cases, etc. This quick-hardening cement stops leaks and holds tight—for it expands slightly as it sets. Use it, too, to stop leaks in radiators, gas tanks, heating, cooling and exhaust systems. Keep Smooth-On No. 1 handy for many auto and household repairs. Buy it in 1-, 5- or 20-lb. size at your hardware store. If they haven't it, write us.

FREE 40-PAGE REPAIR HANDBOOK

Shows, besides above repairs, many time-saving, money-saving household uses. Heating and plumbing system leaks stopped. Loose hinges, handles, parts tightened. 170 illustrations. Write for your free copy TODAY.

SMOOTH-ON MFG. CO., Dept. 69J
570 Communipaw Ave., Jersey City 4, N. J.

Do it with SMOOTH-ON

THE IRON CEMENT OF 1000 USES



MYSTERIOUS DEVICE WELDS BRAZES ANYONE CAN OPERATE SOLDERS & CUTS

ONLY \$9.95

FOUR-WAY WELDER

This newly invented FOUR-WAY PORTABLE ELECTRIC WELDER will do brazing, soft-soldering, welding and cutting on brass, bronze, iron, steel, cast iron and other metals. It's easy to use. WORKS INSTANTLY off any properly wired 110 VOLT A.C. OR D.C. LINE. Does a thousand and one professional type repair jobs. SAVES TIME AND MONEY on auto, home appliances, farm and shop repairs. Ideal for maintenance men, farmers, repair shops, engineers, tin smiths, home and auto owners, bicycle and fix-it shops.

10 DAY TRIAL OFFER. COMES COMPLETE WITH ALL SUPPLIES READY TO OPERATE including instructions. FULLY GUARANTEED. Order today for 10 DAY TRIAL or write for FREE particulars.

FOUR-WAY WELDER CO., Dept. WF-99
2326 So. Michigan Ave., Chicago 16, Ill.

THOUSANDS BUILT AT 1/2 THE PRICE

3 NEW ATOMIC RACERS

U-MAK-IT BOATS

START NOW!

EASY TO ASSEMBLE KITS

NO EXPERIENCE NECESSARY Everything Complete in Kit. Quality Material. Simple as ABC instructions. Immediate Delivery. Save Money. Big Value. Sturdy

ROWBOATS, KAYAKS, DINGHIES, INBOARDS, OUTBOARDS, RUNABOUTS, CABIN CRUISERS

SEND 25c (COIN) FOR CATALOGS

Colorful illustrations show all 49 Models, 8 to 23 Ft., and Construction Details.

U-MAK-IT PRODUCTS MARINE DIVISION
Formerly Kayak Boat Co. 703A WHITTIER ST., N. Y. 59, N. Y.

FUN for YOUR FAMILY



Only 6¢ per Hour **\$39.95** CASH ON ON TIME

Inexpensive. Wholesome Recreation for entire family. EMRICK Power Workshop includes heavy-duty Lathe, Drill Press, Saw Arbor, Grinder and Sander—all operating from ONE motor. Equals in performance equipment costing up to 4 TIMES MORE. Make professional looking articles of wood, metals and plastic... save plenty on household repairs... keep children interested in home projects. MONEY-BACK GUARANTEE. Write for FREE Catalog.

5-in-1
WORKSHOP

EMRICK, INC., 1838 Clinton, Kalamazoo, Mich.

A \$50 A DAY BUSINESS IN YOUR SPARE TIME

FREE BOOK



Take BELSAW Portable Sawmill right to the trees—turn out valuable lumber for local yards—do "custom sawing" for neighbors. BELSAW lasts a lifetime. No crew needed. Power with old auto engine or tractor. Beginners get excellent results. \$62.50 down Send postcard for FREE BOOK, "How To Make Lumber." BELSAW MACHINERY CO.

834-U Field Bldg., 315 Westport Rd., Kansas City 2, Mo.



THE ARISTOCRAT No. 1

Only preformed fiberglas plastic model motor boat on the market. 28 inches long, 9 inch beam, scale model with good lines, operates with a model airplane engine. Kits for assembling with blueprint, full instructions. Indestructible, no cracking or chipping, fully tested. Better than 45 miles per hour. \$18.00 P.P. Prepaid west of Mississippi, east: add 50c not including motor and hardware. Postcard brings details. Discount to hobby shops.

GARTH A. DODGE, 1620 Cowles Street, Long Beach, Calif.



ARC WELDER

A sturdy, compact, metal Arc Welding Outfit for light welding. For home workshops, mechanics, farmers, etc. Repairs toys, fenders and other steel items 16 to 22 gauge. Everything you need—Welder, Helmet, Rods, Attachments, Instructions. Only \$5.95 postpaid, or C.O.D. plus few cents postage. Ten-day Trial Offer. Money back guarantee if not satisfied.

\$5.95

Complete MINEX MFG. CO., 199 Debit St., Newtown, Ohio

Build your own JET ENGINE!



Order these plans today

1. JET PROPELLED BICYCLE. Assemble your own. Photo and instructions \$1.00.
 2. HOW TO MAKE EXPERIMENTAL JET ENGINES. Seven sheets drawings with information and instructions \$3.00.
 3. BOTH OF ABOVE in one order \$3.75.
- SEND NO MONEY. Order both at once \$3.75 C.O.D. in USA plus c.o.d. postage. Send check or Money Order and we pay postage. Get other information too. Rush Order.

J. HOUSTON MAUPIN, Dept. 88, Tipp City, Ohio

MODERNIZE WITH

Chromtrim

"Trim-it-Yourself"

METAL MOULDINGS

Chromtrim is easy to cut, bend and apply. It's the perfect metal for trimming all surface covering materials—linoleum, tile board, etc. in shapes & lengths.

FREE—"Trim-it-Yourself" folder.

R. D. Werner Company, Inc.
295 Fifth Ave., New York 16

Please send me the FREE "Trim-it-Yourself" folder. MI-9

Name _____
Address _____
City _____ Zone _____ State _____



REMODEL KITCHEN
BATH + ATTIC
MAKE METAL PROJECTS
WITH CHROMTRIM



☆ GIANT ☆

ASTRONOMICAL TELESCOPE

Ready for use. 6 ft. tripod. 100 diameters magnification. (10,000 area magnification). Extra eyepiece especially suited to observing Milky Way, Nebulae, Comets, Double Stars and Star Clusters. Sun projector lens for watching sun spots. Full power and clear vision guaranteed. \$15.00. 25% deposit on C.O.D. orders.

Shipped via Express F.O.B. Manorsville
SUFFOLK SCIENCE SERVICE

DEPT. AT. MANORVILLE, N. Y.

HIGH POWER TELESCOPE

60 POWER-ALUMINUM TUBES-OPENS TO 33"

Variable Power Eyepiece Adjustable to 15X, 30X and 60X.

\$450



Leather Case Included

5 Sections. 1 Ground & Polished Lenses. Also used as 50X Microscope. Ready to use. only \$1.50 POSTPAID.

BROWNSOPE CO. Dept. 9L, 24 W. 45th St. NEW YORK 19, N. Y.

EVERYTHING For THE AMATEUR

TELESCOPE MAKER

Make your own telescope. Quality supplies guaranteed. Complete 6" kit \$5.50 up. Pyrex mirrors made to order. Aluminizing. Prisms—eyepieces—etc. Free catalog. Instructions—10c.

PRECISION OPTICAL SUPPLY CO.

1001 East 163rd St., New York 59, N. Y.

Make Your Own

TELESCOPE

Buy materials and instructions from Oldest and most experienced firm in the business.

Write today, for Free Price List

John M. Pierce, Highland Road, Springfield, Vermont

Amateur Telescope

[Continued from page 145]

This will prevent the tripod from spreading. Force the screw eye closed with a vise or a pair of pliers so that the chain will not slip out. •

LIST OF MATERIALS

Six pieces	3/8x1 3/4x24 in. walnut
Three pieces	1 3/4x1 3/4x24 in. walnut
One block	1 3/4x7x7 in. maple
One companion flange	2 1/2x7 in.
One pipe bushing	2 1/2x2 in.
Nine carriage bolts	1/4x20x4 in.
Three machine bolts	1/4x2 in.
Three wing nuts	1/4x20 in.
Six nuts	1/4x20 in.
Twelve washers	For 1/4 in. bolts
Three screw eyes	1/4x1 in.
Galvanized chain	About 6 ft.

TRIPOD PLANS

A large size plan showing all the different parts of this tripod as well as all critical dimensions can be obtained by sending 75c to MI Reader Plan Service, Fawcett Place, Greenwich, Conn. Please ask for plan P-7.

Gadgets

[Continued from page 163]

developing process will appeal to many shut-turbugs. But will this overcome certain disadvantages of the new camera? The Land product enjoyed a big sale when first introduced in stores in New York and elsewhere. Whether the volume will hold up—whether the invention will make a million—only time can tell.

A New York optician, Monroe Levoy, has an entry in the sweepstakes in the form of "Kool Krome" sunglasses. The wearer of these spectacles has vision as good as through any other sunglasses, but to anyone else the lenses look like mirrors. The girl friend can take 'em off and use them as mirrors while applying lipstick or powdering her nose.

The "Kool Krome" lenses, manufactured by Libbey-Owens-Ford Glass Company, are turned into mirrors by the application of a thin coating of chromium to the outside surface of tinted glass. Aside from the novelty value, the specs are said to be better than ordinary sunglasses inasmuch as they reflect a higher percentage of the sun's infra red rays. Maybe Mr. Levoy has a winner!

An inventor named Jerome Murray is hoping to cash in with his new magnetic mixer. To put this machine to work, a housewife simply drops a small steel bar into the batter in the mixing bowl. Then, she puts the bowl on the top of the contraption, inside of which is a magnet being whirled rapidly by a motor. Magnetism spins the bar and presto—the mixing is quickly finished.

By the use of various accessories, Murray's mixer will also squeeze oranges, grind meat, crush ice, scour pots and perform other household chores. Will Mrs. America go for this many-purpose machine? The inventor thinks she will.

Paint that will resist fire is something that has been needed for a long time—and now it has been developed by two bright young men from Harvard, Walter Juda and Grinnell Jones, under the sponsorship of the Alibi Chemical Corporation of New York.

The paint is called "Alibi-R" and has been put on the market in powder form. Mixed with water, it is applied most successfully on interior surfaces. While not washable, it can be covered with ordinary paint to make a durable surface. If flame touches a door or wall covered with Alibi-R, the paint blisters and puffs up, tending to insulate the surface and cut off the oxygen the fire needs to burn.

Maybe you don't have the scientific know-how to develop anything like fire-resistant paint. But—in your hope of making a fortune

[Continued on page 166]

GAME ROOM build your own



It's fun building a game room, and inexpensive too, when you use Gold Bond Gypsum Wallboard. Strong, lightweight, easy to nail. Moisture resistant, fire-proof. Decorate with Gold Bond Sunflex, the low-cost wall paint that dries in one hour. Get both at your local Gold Bond lumber and building material dealer.

Free book of suggestions ↓



NATIONAL GYPSUM COMPANY

Dept. D-3, Buffalo 2, New York

Gentlemen: Send free copy of new booklet, "Modernizing Magic" showing remodeling ideas and methods:

Name

Street

City State

(Please print name and address)

30 Early American Designs

New designs . . . Early American pieces adapted to modern living . . . in 2 series, A and B. Each packet contains 15 sheets, 8½ x 11", with photos and working drawings. Easy to make Christmas gifts . . . cricket, napkin holder, candle stand, etc. Each packet 25c postpaid. Send for both packets, Stanley Tools, 619 Elm St., New Britain, Conn.

25¢
a packet of
15 plans

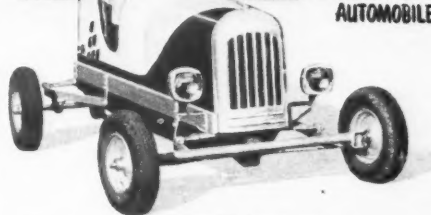


STANLEY

Reg. U.S. Pat. Off.

THE TOOL BOX OF THE WORLD

King Midget



- HOME ASSEMBLED
- MASS PRODUCED
- LOW-COST AUTOMOBILE

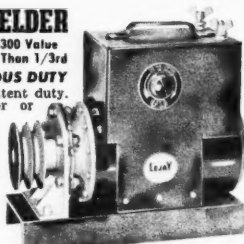
WORLD'S LOWEST PRICED CAR

Drive this car for as low as 50c per week. Up to 90 miles per gallon. 45 to 50 m.p.h. Large enough for a husky six footer. A pleasure to assemble. Just bolt together our precision built parts. Get the facts. Send 25c for detailed circular with large photo. 4 view drawings, price of all parts. Better still, send \$1 (refunded first order) for this plus actual assembly book with 42 photos, drawings; blueprints of snow and ice conversions, etc. **MIDGET MOTORS MFG. CO., Athens 3, Ohio**

When Answering Advertisements, Please Mention MECHANIX ILLUSTRATED

NEW D.C. ARC WELDER

Introductory **\$97.50** A \$300 Value
Offer Less Than 1/3rd
200 AMPERES CONTINUOUS DUTY
Up to 250 amperes intermittent duty.
Easily mounted on tractor or
elsewhere. Welding range
by dial-type control from
0-up. Guaranteed one year
with money-back 10-day
trial period. Write for free
literature or save time and
order direct from **35c**
this ad. Or, send
for PLAN "Build Your
Own Welder from Surplus
Aircraft Generator" and
we'll include free litera-
ture and catalog.



LEJAY MFG. CO.
814 LeJay Bldg., Minneapolis 8, Minn.



NOW! FILE YOUR OWN SAWS

Do expert saw filing at home. Precision filing easy without experience. Two simple adjustments. Keeps any hand saw extra sharp and true-cutting. Complete with file. Money back guarantee. Cash with order, prepaid. (COD post-age extra.) Order today. \$2.95.

THE SPEED CORP., Dept. M
512 N.E. 73 Portland 16, Oregon

BOYS-IT'S FREE!

Exciting, new book tells about
"ATOMIC ENERGY"
and "THE WONDERS OF CHEMISTRY"

Also shows how to amaze friends with
Chemcraft magic and do many exciting
home experiments. Free. Send today!

THE PORTER CHEMICAL CO., 24 Prospect Ave., Hagerstown, Md.



Get these easy-to-follow
plans for a professionally
designed, 14-foot outboard
runabout with sleek Mono-
hedron lines. Great run-
water speedster. Adaptable
to all outboard sizes. Easy
to build at low cost with
these complete miniature
plans, drawn by a re-
nowned boat
builder. Send
\$1.00 money
order today,
for your set.

BUILD YOUR OWN RUNABOUT!



Only **\$1.00** Post Paid
RICHARD COLE, Box 562, Wyzala, Minn.



SET SAW TEETH BY MACHINE!

Approximately 400 teeth per minute
Hand or Band Saw. No breakage.
All teeth uniformly set. 4 1/2 to 16
point. Write today!

BEAVER MFG. COMPANY
804-B South Isis Ave., Inglewood, Calif.

SPEED AND POWER HANDBOOK



Build fast Stock Cars! California Road-
sters! 150 MPH Rads! Covers Ford
to Cadillacs—all makes! Breathing
methods—Authentic—Direct from Cali-
fornia!

SAVE MANY DOLLARS

Build your own Dual Manifolds! Super-
chargers! Hot Cams! Water Injectors! Hi-
Compression Heads! Midget Devrost! Get
racing speed, lightning acceleration, dy-
namism from any make passenger automobile! Get
construction drawings! Tuning techniques! Speed tricks! Picture
catalogues! Ingenious formulas! Economy secrets! Including—"Racing
Frames"—"Requrecooking Masses"—"Jet Engines"—"Braking Char-
acteristics"—"Dynamometers"—"Dual Pipes, Gears, Fuels, Manifolds,
Porting, Relieving, Balancing, Lowering!"

Includes "CALIFORNIA AUTOMOBILE CUSTOMIZING"—Glossy
photographs! Diagrams! Newest ideas! Conversions! Re-Styling all
makes! Streamlining! Chopping! Channeling! Customizing!
50 CHAPTER LIBRARY EDITION—complete—\$1.98 Postpaid.

NEWHOUSE AUTOMOTIVE INDUSTRIES, 5805-C4 EAST BEVERLY, LOS ANGELES 22, CALIF.

Gadgets

[Continued from page 165]

from a gadget or some other discovery—you shouldn't give up. All you need is ingenuity.

You might, for example, dream up something like the following patented items: a hot soup grease skimmer . . . an electric potato masher . . . a radio hat . . . bathing trunks that can be inflated . . . a portable clothes closet . . . floor-polishing slippers . . . an automatic mattress turner . . .

These and many others were on display at the First International Inventors' Exposition staged in New York City's Grand Central Palace last June.

The radio headgear probably attracted as much attention from the visitors to the show as any other gadget. Called the "Man from Mars Radio Hat," it is the creation of Victor T. Hoeflich and has already jingled the cash registers satisfactorily in the department stores where it has been put on sale.

Hoeflich's novelty, used in an unshielded location, will bring in stations within a twenty-five mile radius on all standard wave lengths. The hat sells for \$7.95—and the inventor hopes you'll want one!

The inflated bathing trunks—called "Float-ees," and shown at the Inventors' Exposition by Harry Spack of New York—is another product already on the market. Inside the garment are a pair of "pontoons," made of vinyl plastic, which can be inflated by a long tube normally tucked away in the top of the trunks. Spack hopes enough non-swimmers will buy his "Float-ees" to make them as popular as water-wings used to be.

Another entry at the show was "The Music Writer"—a typewriter that sets musical notations down on paper much faster and more legibly than they could be written by hand. "Long awaited by musicians of all kinds," says its inventor, Dal Molin, "this easy-to-learn, easy-to-operate machine will eliminate hand copying and give a good clean score."

G. A. Parsons, head of the exposition, believes that inventions generally create more employment than they take away. Witness the plastics industry with all its new products and the airplane industry with its safety devices. Are 35,000 new inventions a year too many? Not by any means, he declares.

Parsons says that eight out of every ten Americans today are inventors. Or, would like to be. Are you one of them?

If you've got a bee in your bonnet about a new super-gadget, a startling manufacturing process or a clever adaptation of a standard article, get to work on it. Gadgets have made millions of dollars for other men; they can make your fortune, too! •

Fits Your
Electric Drill

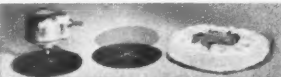


Polish, Sand and Save with BULL BUFFER!

More than pays for itself the very first time you make your car, boat, floors, furniture, woodwork gleam like new!

More than 100,000 enthusiastic users will tell you that Bull Buffer has everything you want in a polisher-sander: (1) fits any electric drill or flexible shaft, (2) exclusive gear reduction that gives any drill real power, (3) exclusive swivel action that makes it easy to use, (4) exclusive angle head that helps get to all those hard-to-reach places other polisher-sanders can't touch

Bull Buffer is built of lifetime materials and guaranteed. Order yours today, at your dealer, or send cash, check, or M. O. for your Bull Buffer, complete as pictured at right, only **\$9.95**



Bull Buffer comes complete with sheepskin bonnet, and 2 sanding discs, only \$9.95

BERTROM S. MFG. CO., 3121 Main Street, Kansas City, Mo.
Dealers Write for Name of Nearest Wholesaler

500 p. Catalog, 7,000 Novelties 10c

Roto Picture Section, 3,500 Illustrations, Beautiful 6-Color Cover



Novelties, gadgets, gifts, funmakers from all over world, Carnival, circus, world's fair & science exhibit rolled into one. Covers hobbies, useful gadgets, timesavers & ALL novelties. Money-savers, money-savers. Live monkeys, shrunken skulls.

10c

Kits Wigs Pipes Guns Jokes Locks Puzzles

Boats	Jewelry	Magnifiers	Electric Eyes	Artist Supplies	Mula Mula Skirts	Smoker's Novelties
Rings	Hobbies	Telescopes	Field Glasses	Novelty Checks	Electric Shockers	Money Printing Sets
Toys	Gadgets	Funmakers	Money Savers	Fortune Tellers	Imported Articles	Engines — Motors
Games	Billboards	Slide Rules	Curious Seeds	Symbol Jewelry	Radios & Supplies	Musical Instruments
Knives	Cameras	Barometers	Skeleton Keys	Office Novelties	Sweater Emblems	Live Animals & Pets
Watches	Airplanes	Chameleons	Wakeup Goods	Lucky Novelties	Projectors & Film	Auto & Bike Accessories
Turtles	Disguises	Microscopes	Banks & Vaults	Occult Novelties	Western Novelties	1000 Fascinating Books
Stamps	Fireworks	Home Tools	Rubber Stamps	Indian Novelties	Scientific Supplies	Winning Bets & Contests
Puzzles	Exercisers	Magic Tricks	Sorting Goods	Fishing Supplies	Religious Novelties	Many, Many Other Things

Collier's, Tide, Coronet, New Yorker Write About This Amazing "World's Greatest" Catalog

25,000,000 orders in 35 years—our record. A catalog, but most wonderful plate paper cover edition, 10c; De Luxe hard bound library edition, 25c. Sent Air Mail for \$1.00. (Stamps accepted.) One per customer. DEPT. 148

DETROIT 7, MICHIGAN

NOW! BOAT AND TRAILER BUILT IN ONE UNIT

For land or water. Easily launched or retrieved over steep shore line—Carries 4 adults or 1/2 ton of freight—Write today for Folder B-5 and special introductory offer—Dealers Wanted!

TRALE-BOTE CO. MFGS-TROTWOOD, OHIO

SIXTH EDITION AUTOMOBILE RACING

Full description with over 100 illustrations of new fast racing creations. Working drawings with step by step building instructions for successful Ford 60 Midnet—Model A Roadster—Offenhauser Dirt Track Racer—Miller 158.5 m.p.h. Racer. Details on axles, frames, engines, bodies, etc., etc. Entrance Blank with rules and regulations. A Book Full of interest for every Auto Racing Fan, Driver, Mechanic and Owner. Money back if not satisfied.

ORDER NOW! \$2.00 POSTPAID; \$2.40 C.O.D.

RAY F. KUNS DEPT. 61 CINCINNATI 27, OHIO

Build Your Own Portable Welder

save up to \$300

Pay for it out of profits... Easy Terms

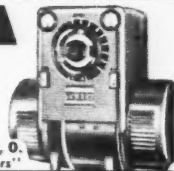
\$300 to \$500 extra profit monthly

Write for this booklet on how to build your own Arc Welder

BUILD YOUR OWN portable ARC WELDER and have a profitable business of your own. It's easy. No experience required. Go after big pay welding jobs.

Send catalog on Arc Welders. HOBART Bros. Co., Box SM-99, Troy, O.

FREE "One of the world's largest builders of arc welders"



WITH MOLLY YOU CAN FASTEN ANYTHING

and do it quickly, neatly and safely, MOLLY will hold fixtures securely to floors, ceilings or any hollow wall construction... Simple to install, all you need is a screw driver. Sold by leading hardware and lumber dealers everywhere.

Write for Free Descriptive Folder

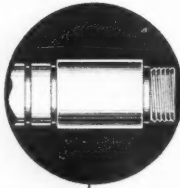
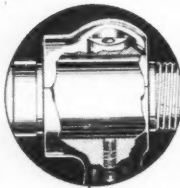
MOLLY SCREW ANCHORS

NO SPECIAL TOOLS NEEDED

522 COURT ST. READING, PA.

When Answering Advertisements, Please Mention MECHANIX ILLUSTRATED

SOUTH BEND 9" LATHES



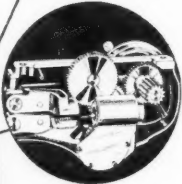
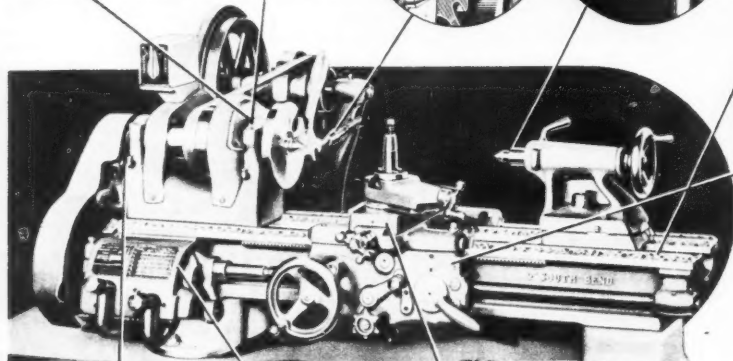
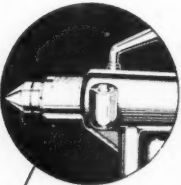
HEADSTOCK

Bearings are line bored and bearingized for precision fit. Ample lubrication from oil reservoirs. Spindle is carburized, hardened, and ground; with bearing surfaces super-finished to .000005" rms.

BELT RELEASE
Instant release of belt tension for speed changes. Proper tension of headstock spindle drive belt is easily adjusted.

TAILSTOCK
Has set-over for taper turning. Graduated spindle has witness mark for aligning cutter bit. Hardened center self-ejecting

BED
Three V-ways and one flat-way are hand-scraped entire length for precision alignment of headstock, tailstock, and carriage.



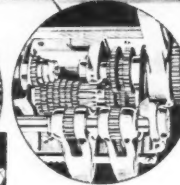
APRON

Has powerful friction clutch and large half-nuts. Safety interlock prevents engaging opposing feeds. All gears machine cut.



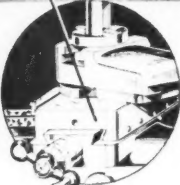
REVERSE GEARS

Easily shifted for reversing lead screw rotation and feeds, positive lock. All the gears used in this lathe are machine cut.



GEAR BOX

Screw threads and power feeds selected by shifting two tumblers as indicated on index chart. All gears machine cut steel.



CARRIAGE

V-ways and dovetails hand-scraped. Engine divided micrometer collars on feed screws. Compound Rest base graduated 180 degrees.

Specifications . . .

South Bend 9" Model A Lathe

SWING over bed — 9-1/4"
over cross slide — 5"
BED LENGTHS . . . 3, 3-1/2, 4, and 4-1/2 feet
DISTANCE BETWEEN CENTERS . . 16" to 34"
SPINDLE SPEEDS (12) . . 41 to 1270 r.p.m.
POWER FEEDS:
Longitudinal (48)0015" to .0853"
Cross-feed (48)0004" to .0252"
THREADS (48 pitches) . . . 4 to 224 per inch
MAXIMUM COLLET CAPACITY . . . 1/2 inch
SPINDLE BORE 3/4 inch
TAILSTOCK TOP SET-OVER 5/8 inch

SOUTH BEND LATHE WORKS

453 East Madison Street, South Bend 22, Indiana, U. S. A.

Please send catalog(s) checked:

- Catalog No. 9 — all models of South Bend 9" Lathes.
- Catalog No. 100 — all sizes of South Bend Lathes.
- Catalog No. 400 — South Bend Precision Drill Presses.
- Catalog No. 500 — 7" Bench Shaper.
- Catalog No. 77 — Attachments and Accessories.
- Time Payment Plan.

NAME _____

STREET _____

CITY _____

STATE _____

9" x 3' Model A Bench Lathe, illustrated (Cat. No. 644-Y), with 12-speed horizontal drive, motor, and control — **\$340.45***

Time Payment Terms — \$85.45 down, 12 monthly payments of \$22.52.

Other models of South Bend 9" Lathes, priced from \$187.35* to \$805.45*, may also be purchased on time payment terms of 25% down with balance in 12 monthly payments, small finance charge.

*Prices, f.o.b. factory, include 1 phase, 60 cy., 115-V. motor and control.



SOUTH BEND LATHE WORKS

BUILDING BETTER TOOLS SINCE 1906

September, 1949

YOUR OWN
Get the Facts
New Industry
MEANS \$ \$
People from all
have started on
Success w
FLOK-KI

MUCH PROFITS ARE WAITING to be made in this new field. New MIRA Flok-Ki gives a velvety, luxurious finish to radios, lamps, toys, signs, clocks, trays, figurines, auto dashboards, hundreds of other items. Millions of beautiful and salable subjects worth much more than their cost. This soft, rich covering that can be applied to any surface, even old and worn.



MR. NELS IRWIN

will train you in your own home. I will give you full advantage of my 10 years of experience in this interesting and profitable new field of endeavor.

regular job, or begin to build a part-time business of your own, and you owe it to Yourself to enter this new industry—see what it may have for you. **GRASP THIS OPPORTUNITY TODAY!** Fill out the Postcard at right and mail. No postage is required. **FREE** sample of FLOK-KRAI. Hundreds of useful and profitable subjects at your door. No one will call on you.

ACT NOW! SEND TO:
COAST INDUSTRIES • 100

BUSINESS WITH A FUTURE!
FREE! - Cash in NOW!

A New Miracle Finish!

\$ TO YOU

**l walks of life
 n the road to
 with
 KRAFT**

o be tapped
 RACLE fin-
 ous surface
 s, store dis-
 boards, and
 Make old
 ble—make
 more with
 at can
 , even



RADIOS ARE BUT ONE
 OF THE HUNDREDS OF THINGS
 MADE BEAUTIFUL WITH FLOK-KRAFT

YES, YOU CAN LEARN IN A FEW DAYS to start
MAKING MONEY! Everything you need
 is furnished, including fully detailed illus-
 trated instructions that are **COMPLETE**
 and easy to understand. Every point is ex-
 plained, to show you how to start on the
 road to big money, full or spare time, right
 in your own home.

**READ WHAT OTHERS SAY ABOUT
 COAST INDUSTRIES' PLAN FOR
 YOUR SUCCESS!**

EVERYTHING YOU NEED TO START

In addition to full instructions,
 you get a complete set of mate-
 rials that enables you to start
 at once. A few cents worth of
 materials can mean many dol-
 lars in return to you—you can
 earn **BIG BIG** money. Make big
 Profits—spare or full time. You
 can add to the income from your
 build your own future with a full
 and do it all in your own home.

to Investigate this new growing
 y hold for you. . .

TODAY! It's too good to miss!
 right and mail today for full de-
 tailed if mailed in the U. S. A.
FLOK-KRAFT covered material and hun-
 dreds of **IDEAS** will be sent right to
 all on you. Do it **NOW**—be first!

 <p>"Received the flok kraft outfit and everyone that saw it is very enthused. I only had it about thirty minutes and got an order for a hundred dollar job and promises of several more." Mr. C. H., Maryland</p>	 <p>"Got \$52.50 for those 7 trunk interiors for about 4 hours work \$7.50 per trunk." J. O., Missouri</p>
 <p>"Just a few lines to let you know I have received my order of Flok and Adhesives of the 15th of March, 1949, and believe me, I'm very pleased and happy as I've made myself MORE than the cost of my supplies already, and I've still got more jobs to do." R. W. L., Ohio</p>	 <p>"I am kept busy every day with orders. I am very pleased with the results I get from your merchandise." K. G. M.</p>
 <p>"I am pleased with your course and I am being swamped with work to do." W. F., Pa.</p>	

SEND FOR FREE SAMPLES AND DETAILS

1004 S. LOS ANGELES ST. • LOS ANGELES 15, CALIF.

**HERE ARE A FEW OF THE HUNDREDS
 OF ITEMS TO WHICH FLOK-KRAFT
 CAN BE APPLIED**



... toys



... phonograph turn tables



... lamps - figurines - pottery - plastics - glass



JEWELRY BOXES



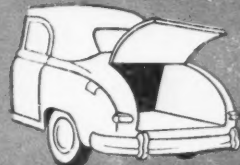
... shoes or party slippers



... display pieces - counter display signs



... auto trunk interiors - glove compartments - auto dashboards



ALL OF THESE - AND HUNDREDS MORE

Cut Out and Mail Card



IT DOES NOT COST YOU ONE CENT!

COMPLETE DETAILS SENT FREE!

At no cost to you we will send full details showing how our plan can assist you in starting your own spare or full time business. We will also send you actual sample of **FLOK-KRAFT**. Something you can see and feel. All that is necessary for you to do is print your name in the space provided below. Clip out the card on the dotted line and drop in the nearest mailbox. **NO POSTAGE IS REQUIRED IF MAILED IN THE U. S. A.**

COAST INDUSTRIES, Dept. 39

1004 S. Los Angeles St., Los Angeles 15, Calif.

Gentlemen: Please rush me free details. I understand that I will be under no obligation now or ever.

Name _____

Street _____

City _____ Zone _____ State _____

SEE OTHER SIDE



**TIRED OF A
HUMDRUM JOB AND
LACK OF MONEY?**

**LEARN HOW YOU CAN
BUILD YOUR OWN BUSINESS,
HAVE A GOOD INCOME
SPARE TIME OR
FULL TIME IN YOUR
OWN HOME**



CUT OUT AND MAIL THIS CARD NOW

Dept. 39

COAST INDUSTRIES

1004 So. Los Angeles Street

Los Angeles 15, Calif.

4¢ POSTAGE WILL BE PAID BY

BUSINESS REPLY CARD

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

FIRST CLASS
PERMIT NO. 20091
(Sec. 510, P. L. & R.)
LOS ANGELES, CALIF.



R. J. Reynolds
Tobacco Co.,
Winston-Salem,
N. C.

**30-Day Mildness Test w
thousands of smokers to Cam**



PATRICIA MORISON, musical comedy star: "I made the test. I smoked Camels for 30 days. Camels for me!"



FOREMAN Merritt C. Humeston: "30 days? I've given Camels a 10-year test. I know how mild they are!"



HOUSEWIFE M. Reilly: "I've tried many brands. Nothing like Camels taste and mildness."



JOHNNY VANDER MEER, pitcher: "I've smoked Camels since I was a rookie. Camel flavor bats 1,000 with me!"



"THE 30-DAY TEST was fun! I learned how truly mild a cigarette can be."—Cecelia Garland, bank teller.



R. M. ELLIOT, merchandiser: "Camels are a year 'round hit with me. That rich Camel flavor suits me to a 'T.'"



"I ENJOYED the test! It led me to the mildest, best-tasting cigarette I have ever smoked."—Marylee Hahn, student.



VETERAN divers Desjardins: "I'd go a mile for a Camel. Their full flavor tire my taste!"



COLORATURA Virginia MacWatters: "I'm glad I made the test! I found the answer to mildness—Camel!"



"I SMOKE up to 2 packs a day. Camels are mild and don't tire my taste."—Lew Worsham, professional golfer.



PHOTO. ASS'T., Michael Pop: "It's great to find a mild cigarette with so much flavor. The test won me to Camels!"

In a recent test of hundreds of people who smoked only Camels for 30 Days, noted throat specialists, making weekly examinations, reported

**Not one single case
of throat irritation
due to smoking CAMELS!**



● The doctors' findings (left) speak for themselves. But test Camels in your "T-Zone." See if you don't agree... Camels are the mildest, best-tasting cigarette you've ever smoked.